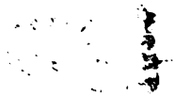
Nash

TECHNICAL SERVICE MANUAL

SUPPLEMENT

1954 SERIES



FOREWORD

The following product information will provide complete Nash Service Information when used in conjunction with the 1952 Series Nash Technical Service Manual and 1953 Series Manual Supplement.

This product information should be kept in a convenient location together with the Service Manuals so that complete information will be available for prompt model and series references.

NASH MOTORS

DIVISION OF NASH-KELVINATOR CORPORATION

DETROIT 32, MICHIGAN

NAS-53-1545-75C-1253

Litho in U.S.A.

TECHNICAL SERVICE MANUAL

SUPPLEMENT 1954 Series

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N A S H M O T O R S
DIVISION OF NASH-KELVINATOR CORPORATION
Detroit 32, Michigan, U. S. A.

Starting (1954) Serial Numbers:

	"Ambassador"	"Statesman"	"Rambler"
Kenosha	R-722501	K-615501	D-171501
El Segundo	RC-22001	KC-47201	DC-12301
Canada		KT-9101	DT-2901

Starting Engine Numbers:

"Ambassador" — A-246001
(Prefix LMA on "Le Mans" Dual Jetfire)

"Statesman" — S-430001 (Single Carburetor)
J-1001 (Dual Carburetor)

"Rambler" — F-170001 (4" Stroke)
H-12001 (4¼" Stroke)

ENGINE SECTION

"STATESMAN" SERIES

The 1954 "Statesman" Series Dual Powerflyte engine incorporates two Model "YF" Carter Carburetors mounted on an aluminum cylinder head having an 8.5 to 1 compression ratio.

AL-5 Auto-Lite Spark Plugs with 7/16" long reach are used with the aluminum cylinder head.

The camshaft lobe design has been revised to obtain a 29° valve overlap. The intake valve opens 10° B.T.D.C. and exhaust closes 19° A.T.D.C.

The distributor spark curve has been revised to accommodate the changes in the induction system and compression ratio.

ENGINE SPECIFICATIONS

Series	"Ambassador"		"Statesman"	"Rambler"	
	"Le Mans" Dual Jetfire	Super Jetfire		100" Wheelbase with Standard or Overdrive Transmission	108" Wheelbase and 100" Wheelbase with Hydra-Matic Trans.
Type	Valve-In Head	Valve-In Head	L-Head	L-Head	L-Head
No. of Cylinders	6	6	6	6	6
Bore	3½"	3½"	3⅛"	3⅛"	3⅛"
Stroke	4⅜"	4⅜"	4¼"	4"	4¼"
Compression Ratio	8.0-1	7.6-1	8.5-1	7.25-1	7.3-1
Piston Displacement Cu. In.	252.6	252.6	195.6	184.0	195.6
Compression Pressure at Cranking Speed	130#	120#	150#	120#	120#
Taxable Horsepower	29.4	29.4	23.44	23.44	23.44
Horsepower SAE Brake	140 @ 4000 R.P.M.	130 @ 3700 R.P.M.	110 @ 4000 R.P.M.	85 @ 3800 R.P.M.	90 @ 3800 R.P.M.
Maximum Torque	230 @ 2000 R.P.M.	220 @ 1600 R.P.M.	155 @ 2000 R.P.M.	150 @ 1600 R.P.M.	150 @ 1600 R.P.M.
Engine Lubrication	Pressure	Pressure	Pressure	Pressure	Pressure

OIL SYSTEMS

Series	"Ambassador"	"Statesman"	"Rambler"
Oil Pump Type	Gear	Gear	Gear
Normal Oil Pressure	30# @ 20 M.P.H. 12# Min. @ 600 R.P.M.	30# @ 20 M.P.H. 12# Min. @ 600 R.P.M.	30# @ 20 M.P.H. 12# Min. @ 600 R.P.M.
Oil Pressure Release	50-58#	50-58#	50-58#
Engine Oil Refill Capacity	6 Qts.	4 Qts.	4 Qts.

ENGINE SECTION

CRANKSHAFT AND BEARINGS

Series	"Ambassador"	"Statesman" and "Rambler"
Bearing Type	Replaceable	Replaceable
No. of Main Bearings	7	4
Main Bearing Clearance	.001" — .002"	.001" — .002"
Diameter	2.479"	2.479"
Shaft End Play	.006" — .008"	.006" — .008"
End Thrust Taken By	Center Main Bearing	Front Main Bearing
Bearing Cap Adjustment	66-70 Ft. Lbs. (Dry)	66-70 Ft. Lbs. (Dry)

VALVE SPECIFICATIONS

Series	"Ambassador"	"Statesman" and "Rambler"
Stem Diameter — Intake	.3725" — .3735"	.3407" — .3412"
Exhaust	.3720" — .3730"	.3407" — .3412"
Stem to Guide Clearance	.002" — .004"	.002" — .003"
Head Diameter Intake	1.787"	1.594"
Head Diameter Exhaust	1.468"	1.343"
Seat Angle	45° Ex. 30° Int.	45°
Valve Face Angle	44° Ex. 29° Int.	44°
Valve Spring Free Height	2 1/16"	2 5/32"
Valve Spring Pressure — Valve Open	141-151# @ 1 7/16"	75-82# @ 1 7/16"
Valve Closed	53-58# @ 1 13/16"	37-41# @ 1 3/4"
Spring Retainer Lock	Split Two-Piece	Single Horseshoe
Tappet Clearance (Running Hot)		
Intake	.012"	.015"
Exhaust	.016"	.015"
Cold Setting — Intake		.016"
Exhaust		.018"

PISTON RINGS

Series	"Ambassador"	"Statesman" and "Rambler"
No. of Rings Per Piston	4	4
End Gap Minimum (Except "U" Flex Ring)	.007"	.010"
Compression Ring Width	.0930" — .0935"	.0930" — .0935"
Oil Ring Width	.1545" — .1550"	.1545" — .1550"
Compression Ring, Side Clearance in Ring Groove	.002" — .004"	.002" — .004"
Oil Ring, Side Clearance in Ring Groove	.002" — .004"	.002" — .004"

ENGINE SECTION

CONNECTING ROD AND BEARING

Series	"Ambassador"	"Statesman" and "Rambler"
Bearing Type	Replaceable	Replaceable
Bearing Clearance	.001" — .0025"	.001" — .0025"
Crank Pin Diameter	2.0010" — 2.0003"	2.0943" — 2.095"
Bearing End Play	.005" — .015"	.005" — .015"
Bearing Cap Adjustment	52-56 Ft. Lbs. (Dry)	27-30 Ft. Lbs. (Dry)

TUNE-UP DATA

Series	Plug Gap	Tappet Clr. Hot	Dist. Point Gap	Dwell Angle	Ignition Timing (Vibration Damper)
"Ambassador"	.030"	Int. .012" Ex. .016"	.018" — .024"	31-37°	T.D.C.
"Statesman"—108" W.B. "Rambler" and 100" W.B. Hydra-Matic "Rambler"	.030"	.015"	.018" — .024"	31-37°	4° A.T.D.C.
100" W.B. "Rambler" with Standard and Overdrive Trans.	.030"	.015"	.018" — .024"	31-37°	T.D.C.

Engine Idle Speed —

500-550 R.P.M. (Std. and O.D.)

550-650 R.P.M. (Dual Jetfire)

450 R.P.M. Exact (Hydra-Matic) with selector lever in neutral position. Engine at normal operating temperature.

Compression pressure at cranking speed 120 Lbs. except "Le Mans" Dual Jetfire 130 Lbs. "Statesman" Dual Powerflyte 150 Lbs.

Spark Advance (See Electrical Specifications — Distributor).

Firing Order — 1, 5, 3, 6, 2, 4.

Positive battery terminal grounded.

Coil — Secondary terminal tower, negative polarity.

Breaker Point spring tension, Distributor 17-21 Ounces.

Spark Plugs — Auto-Lite A-7

14 MM. Thread

30 Lbs. Maximum Torque

"Ambassador", "Le Mans" Dual Jetfire and "Statesman" Dual Powerflyte — AL-5 — 14 MM. — 25 Ft. Lbs. Torque

Cylinder Head Stud Nut Torque Specifications:

"Ambassador" Series — 65-70 Ft. Lbs. (Cast Iron)

"Le Mans" Dual Jetfire — 65-70 Ft. Lbs. (Aluminum — Cold)

"Statesman" Series — 57-60 Ft. Lbs. (Aluminum — Cold)

"Rambler" Series — 57-60 Ft. Lbs. (Cast Iron)

ELECTRICAL SECTION

DISTRIBUTOR

"Statesman" Series

A new distributor is used on the 1951 "Statesman" to compensate for the changes in compression ratio. dual carburetion. and the new camshaft.

VOLTAGE REGULATOR

All Series

The generator current and voltage control units are changed in design and operation.

The change made was the elimination of the series field coil or accelerating coil in the voltage control relay. A single shunt coil carries the current used to control the field circuit of the generator. The merit of this change is that the voltage is controlled more uniformly.

It is necessary to always have a battery in the charging circuit using the variable resistance method with the current flow adjusted to 1 to 10 amperes when testing the operation of the voltage regulator.

Correction for Room Temperature

The "normal" voltage regulator setting listed in the specifications applies to the unit at operating temperature when checked at room temperature of 80°F. At higher room temperatures. the "normal" setting should be .1 volt less for each 10° above 80°F. At lower room temperatures. the "normal" setting should be .1 volt higher for each 10° below 80°F.

Compensation for Unusual Conditions

If the battery uses too much water at the "normal" setting. reduce the voltage .1 to .2 of a volt and check for improved condition over a reasonable service period. Repeat until battery remains charged with a minimum use of water. It rarely will be necessary to adjust below 6.9 volts on a 6 volt system.

CAUTION: Whenever the voltage is reduced. the cut-out relay must be checked and adjusted if necessary. The cut-out relay setting must always be .5 volt less than the voltage regulator setting.

If the battery is consistently undercharged at the "normal" setting. increase the voltage .1 volt and check for improvement over a reasonable period of service. Repeat until the battery remains charged with a minimum use of water. It is rarely necessary to adjust over 7.5 volts on a 6 volt system.

CAUTION: When increasing voltage. avoid settings high enough to damage lights or other voltage sensitive equipment during cold weather.

Before making any adjustments to compensate for unusual conditions. be sure the battery is in a perfectly normal condition.

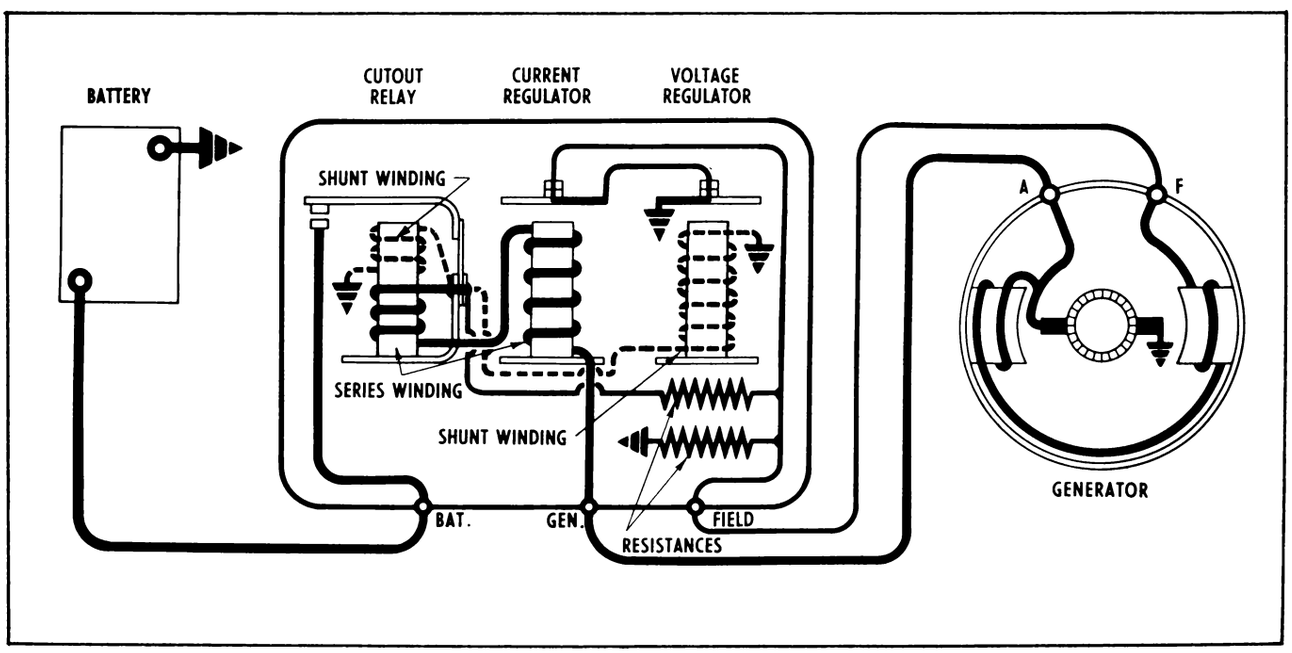


FIGURE 1
VOLTAGE REGULATOR WIRING DIAGRAM

ELECTRICAL SECTION

SPECIFICATIONS

BATTERY

Series	"Ambassador"	"Statesman" and "Rambler"
Make	Auto-Lite	Auto-Lite
Model	IH-105D	IM-100
Ampere Hours: 20 Hour Rating	105	100
Amperes: 20 Minute Rating	133	
No. of Plates	15	15

GENERATOR

Series	"Ambassador" and "Statesman"	"Rambler"
Make	Delco-Remy	Delco-Remy
Model	1102777	1100021
Type	Shunt	Shunt
Rotation	R. H. Drive End	R. H. Drive End
Brush Spring Tension	28 Oz.	28 Oz.
Maximum Controlled Charging Rate (Controlled by Current Setting)	47 Amperes	38 Amperes

VOLTAGE AND CURRENT REGULATOR

Series	"Ambassador" and "Statesman"	"Rambler"
Make	Delco-Remy	Delco-Remy
Model	1118828	1118841
Cut-Out Relay Voltage at Closing	Adjust to 6.4	Adjust to 6.4
Air Gap	.020"	.020"
Voltage Regulator Volts	Adjust to 7.3	Adjust to 7.3
Air Gap	.075"	.075"
Current Regulator Amperes	Adjust to 47	Adjust to 38
Air Gap	.075"	.075"

ELECTRICAL SECTION

STARTING MOTOR

Series	"Ambassador" Reg. Trans. and Overdrive	"Ambassador" With Hydra-Matic	"Statesman" and "Rambler"
Make	Delco-Remy	Delco-Remy	Delco-Remy
Model	1107950	1108029	1107119 (Std. & O.D.) 1107136 (Hydra-Matic)
Brush Spring Tension	24-28 Ozs.	24-28 Ozs.	24-28 Ozs.
Lock Test Amperage Draw	570	550	550
Volts	3.15	3.25	3.25
Torque in Foot-Pounds	14	11	11
No Load Test Amperage Draw	70	70	70
Volts	5.65	5.65	5.65
R.P.M.	5500	5500	5500

DISTRIBUTOR

Series	"Ambassador"	"Statesman"	"Rambler"
Make	Delco-Remy	Delco-Remy	Delco-Remy
Model	1110227	1112401	1112382
Rotation	Counterclockwise at Drive End	Clockwise at Drive End	Clockwise at Drive End
Cam Angle	31 to 37 Degrees	31 to 37 Degrees	31 to 37 Degrees
Contact Point Pressure	17 to 21 Ounces	17 to 21 Ounces	17 to 21 Ounces
Contact Point Opening	.022"	.022"	.022"
Condenser Capacity	.18 to .23 Mfd.	.18 to .23 Mfd.	.18 to .23 Mfd.
Automatic Advance	Start 0 to 4.0 Engine Degrees at 700 Engine R.P.M.	Start 0 to 4.0 Engine Degrees at 750 Engine R.P.M.	Start 0 to 4.0 Engine Degrees at 600 Engine R.P.M.
Intermediate	12-16 Engine Degrees at 1300 Engine R.P.M.	2-6 Engine Degrees at 800 Engine R.P.M.	4-8 Engine Degrees at 800 Engine R.P.M.
Maximum	26-30 Engine Degrees at 2700 Engine R.P.M.	20-24 Engine Degrees at 3600 Engine R.P.M.	18-22 Engine Degrees at 2400 Engine R.P.M.
Vacuum Advance			
Make	Delco-Remy	Delco-Remy	Delco-Remy
Model	1116044	1116072	1116072
Advance	4-6 Inches Vacuum to Start Travel 15 Inches Vacuum for 10-14 Degrees Engine Advance (7/64" Travel)	4-6 Inches Vacuum to Start Travel 11 Inches Vacuum for 9-13 Degrees Engine Advance (15/64" Travel)	4-6 Inches Vacuum to Start Travel 11 Inches Vacuum for 9-13 Degrees Engine Advance (15/64" Travel)

ELECTRICAL SECTION

MISCELLANEOUS

Series	"Ambassador" Dual Jetfire	"Ambassador" Jetfire	"Statesman"	"Rambler" 108" W.B. and 100" W.B. with Hydra-Matic Trans.	"Rambler" 100" W.B. with Standard or Overdrive Transmission
Timing, Breaker Points Open	T.D.C.	T.D.C.	4° A.T.D.C.	4° A.T.D.C.	T.D.C.
Timing Mark Location	Vibration Damper	Vibration Damper	Vibration Damper	Vibration Damper	Vibration Damper
Firing Order	1, 5, 3, 6, 2, 4	1, 5, 3, 6, 2, 4	1, 5, 3, 6, 2, 4	1, 5, 3, 6, 2, 4	1, 5, 3, 6, 2, 4
Spark Plug	AL-5	A-7	AL-5	A-7	A-7
Thread	14 MM.	14 MM.	14 MM.	14 MM.	14 MM.
Spark Plug Gap	.030"	.030"	.030"	.030"	.030"

FUEL-CARBURETION SECTION

CARBURETOR

"Statesman" Model "YF"-2098-S and YF-2137-S Climatic Choke Carburetors

SPECIFICATIONS:

Dimensions:

Flange size. 1¼ inch S.A.E.
Primary venturi. 11/32 inch I.D.
Secondary venturi. 11/16 inch I.D.
Main venturi. 1¼ inch I.D.

Float Setting:

See Adjustments.

Vents:

Outside none. Inside, balance vent to air horn above choke valve.

Gasoline Intake:

Size No. 42 (.0935") drill in needle seat.

Low Speed Jet Tube:

Jet. size (2098S) No. 71 (.026 inch); (2137S) No. 70 (.028 inch) drill. By pass in air horn. size .042 inch diameter. Economizer in body. size No. 54 (.055 inch) drill. Idle bleed in body. size No. 52 (.0635 inch) drill.

Idle Port:

Upper, slot type. length (2098S) .200 inch (2137S) .160 inch; width .030 inch.

Idle Port Opening:

Top of port (2098S) .142 to .146 inch; (2137S) .115 to .119 inch above top edge of valve with valve tightly closed.

Lower Port (For Idle Adjustment Screw):

.0615" to .0655" diameter.

Set Idle Adjustment Screw:

½ to 1½ turns open. For richer mixture turn screw out. Idle engine 450 RPM (hydramatic—in neutral): 550 RPM (standard and overdrive transmission).

Main Nozzle:

Nozzle is installed permanently. DO NOT REMOVE. Anti-percolator air bleed, size No. 70 (.028") drill.

Metering Rod:

Economy step (2098S) .077 inch; (2137S) .074 inch diameter. Power step (2098S) .066 inch; (2137S) .060 inch diameter.

Metering Rod Jet:

(2098S) .102 inch; (2137S) .098 inch diameter.

Metering Rod Setting:

See Adjustments.

Accelerating Pump:

Discharge through nozzle. Diaphragm type. vacuum and mechanically operated. Discharge restriction (in housing). size No. 69 (.029 inch) diameter. Intake disk check seat (in diaphragm housing). size No. 40 (.098 inch) drill. Discharge ball check seat (in diaphragm housing). size No. 32 (.116 inch) drill. Vacuum restriction (in flange). size No. 55 (.052 inch) drill. Vacuum passage (diaphragm bleed). size No. 65 (.035 inch) drill.

Pump Adjustment:

None.

Choke:

Carter Climatic Control. set two points lean. Choke heat suction hole in body size (2098S) No. 46 (.081 inch) drill; (2137S) No. 42 (.0935 inch) drill.

Vacuum Spark Port:

Round type. size .040" diameter. Bottom of port .001" to .009" above top edge of valve with valve tightly closed.

ADJUSTMENTS

Float Adjustment:

With gasket removed. bowl cover assembly inverted. and float resting on seated needle. the distance from the bowl cover to the top of float at free end should be 3/8". (gauge T-109-80). Adjust by bending lip of float. not float arm.

Metering Rod Adjustment:

This adjustment is important and should be checked each time the carburetor is reassembled or lean rods are installed. With throttle valve seated in bore of carburetor. press down on upper end of diaphragm shaft until diaphragm bottoms in vacuum chamber. Tool T-109-212 may be used to hold diaphragm shaft down while adjusting metering rod. Metering rod

should contact bottom of metering rod well and metering rod arm should contact lifter link at the outer end nearest the springs and at supporting lug. Adjust by bending lip of metering rod arm to which metering rod is attached, up or down.

Accelerating Pump:

If acceleration is not satisfactory, remove pump housing, intake check assembly and discharge check ball and spring. Examine diaphragm for wear or damage. Be sure intake screen, intake check and discharge check are not clogged with lint or foreign matter. Discharge check ball must seat, as a leak at this point will result in poor acceleration. Inspect and replace all worn parts, clean and blow out all passages with compressed air.

Fast Idle Adjustment:

Remove thermostatic coil housing, gasket and baffle plate. Crack throttle valve, and hold choke valve fully closed, then close throttle. This will allow fast idle cam to revolve to fast idle position. With choke valve held tightly closed and throttle closed as far as possible, there should now be .024" clearance (gauge T-109-189 may be used) between throttle valve and bore of carburetor (side opposite idle port). Adjust by bending connector link at lower angle. Use bending tool (T-109-213).

Unloader Adjustment:

This adjustment must be made after fast idle adjustment. Hold throttle valve in wide open position and close choke valve as far as possible without forcing. There should be 7/16" clearance between lower edge of choke valve and inner wall or air horn (gauge T-109-81). Adjust by bending arm of choke trip lever (Use Tool T-109-214).

On-the-Car Adjustment of Carburetors:

After the carburetors are bench calibrated and mounted on the engine, several adjustments must be made to synchronize them.

First, remove the air cleaner assemblies from carburetor air horns.

Start with the rear carburetor and adjust throttle stop screw until valve is seated in closed position. While doing this, the choke valve must be held in the open position, to insure throttle stop screw contacting low speed stop in the fast idle cam mechanism.

Turn throttle stop screws about two turns to crack valves slightly.

Start engine and run to obtain operating temperature. Attach tachometer to engine and observe R.P.M. Adjust rear carburetor to maintain minimum of 550 R.P.M.

By means of the connecting throttle linkage between carburetors, adjust front carburetor to synchronize with rear maintaining rear carburetor throttle on idle stop position while checking.

During adjustment, reference must be made to the tachometer because it will indicate when front carburetor throttle is opened beyond rear throttle. The point at which further opening of the front carburetor throttle would cause an increase in R.P.M. is the point of throttle synchronization. At this time, the air inlet noise of each carburetor will be identical.

To make the idle mixture adjustment, replace the air cleaner. Turn rear carburetor mixture adjustment screw in (lean) until engine operation becomes rough, then open 1/4 turn toward rich. Repeat this on front carburetor.

Another idle speed throttle synchronization adjustment may be required because of improved idle mixture. Adjust idle speed to 550 R.P.M.

BRAKE SECTION

POWER BRAKES

"Ambassador" and "Statesman" Series

Power braking is a method of hydraulically applying the wheel brake units with power supplied by engine intake manifold vacuum and atmospheric pressure actuated by a minimum amount of foot pedal pressure.

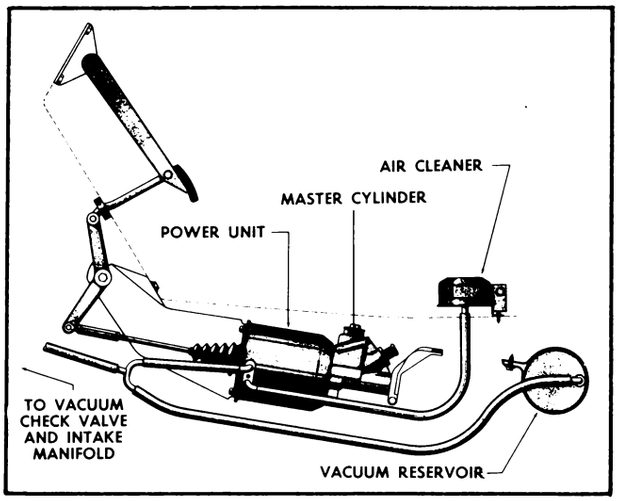


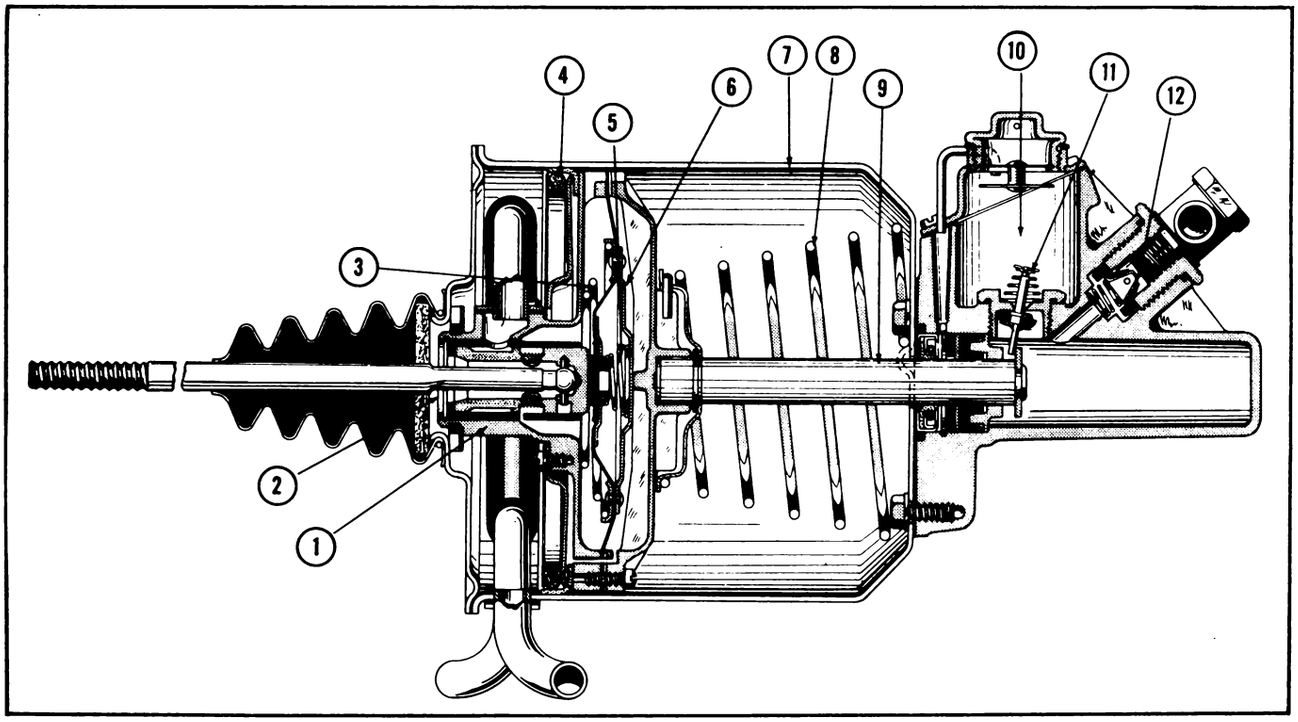
FIGURE 1
POWER UNIT, CONNECTIONS AND BRAKE PEDAL LINKAGE

The power unit consists of a vacuum power brake unit and master cylinder. Thus, the power system is an integral part of the brake system (Fig. 1).

A vacuum reservoir tank is located in the intake manifold vacuum line directly behind the power unit on the underside of the floor pan. In the event of engine failure and with vacuum reserve already used on previous brake applications, the brake may be applied through physical effort alone. The effort required by the operator to make a non-power stop is increased appreciably in comparison to the pedal pressure required when power is available.

IMPORTANT: If the engine should stall when operating on extreme inclines, the parking brake should be set on the first application of the foot brake until the engine is again operating and the vacuum supply is restored.

Set the parking brake firmly before turning off the engine when parking cars equipped with power brakes on extremely steep grades. Be sure the engine is operating before releasing the parking brake.



1. Slide Valve Sleeve
2. Slide Valve and Push Rod
3. Reactionary Spring
4. Piston Packing
5. Slide Valve Return Spring
6. Reactionary Diaphragm
7. Vacuum Cylinder
8. Piston Return Spring
9. Master Cylinder Piston Rod
10. Fluid Reservoir
11. Compensating Port Valve
12. Residual Check Valve

FIGURE 2
CROSS SECTION VIEW POWER UNIT

The "Statesman" and "Ambassador" power brake units are basically of the same design and their operation is identical. the only difference being in fluid displacement. The "Statesman" has a smaller master cylinder piston rod assembly. thus creating a lower displacement and higher line pressure. These differences are essential because the "Ambassador" Series uses a servo brake while the "Statesman" Series uses a non-servo floating shoe type.

The power brake assembly consists of two basic elements (Fig. 2).

Power System

The power system consists of a vacuum power cylinder. vacuum piston and control valve assembly. and piston return spring.

Master Cylinder

The master cylinder contains a piston rod, compensating valve. residual check valve. and fluid reservoir.

OPERATION

Released Position (Fig. 3).

In the released position, both sides of the vacuum piston and the reaction diaphragm are open to atmospheric pressure. Therefore, the piston and diaphragm are balanced in atmospheric pressure.

The vacuum piston and slide valve return springs hold the piston and the slide valve in the fully released position.

The vacuum piston return spring is attached to the master cylinder piston rod. It, therefore, holds the piston rod in the released position and the compensating port of the master cylinder open.

Applied Position (Fig. 4).

As the brake pedal is depressed, the valve push rod moves the slide valve to close the atmospheric port and open the vacuum port, thus connecting the right side of the vacuum power piston and left side of the reactionary diaphragm to engine vacuum.

The atmospheric pressure present at all times on the left side of the vacuum power cylinder then moves the piston in the applied direction.

At the same time that this pressure differential is created in the vacuum cylinder, a similar pressure differential, but in the opposite direction, is created in the inside of the piston. This opposite pressure differential reacts against the slide valve causing an opposing force against the brake pedal.

This opposing pressure increases in direct proportion to the amount of applied pedal pressure. Therefore, at all times, the operator has complete feel of his brakes.

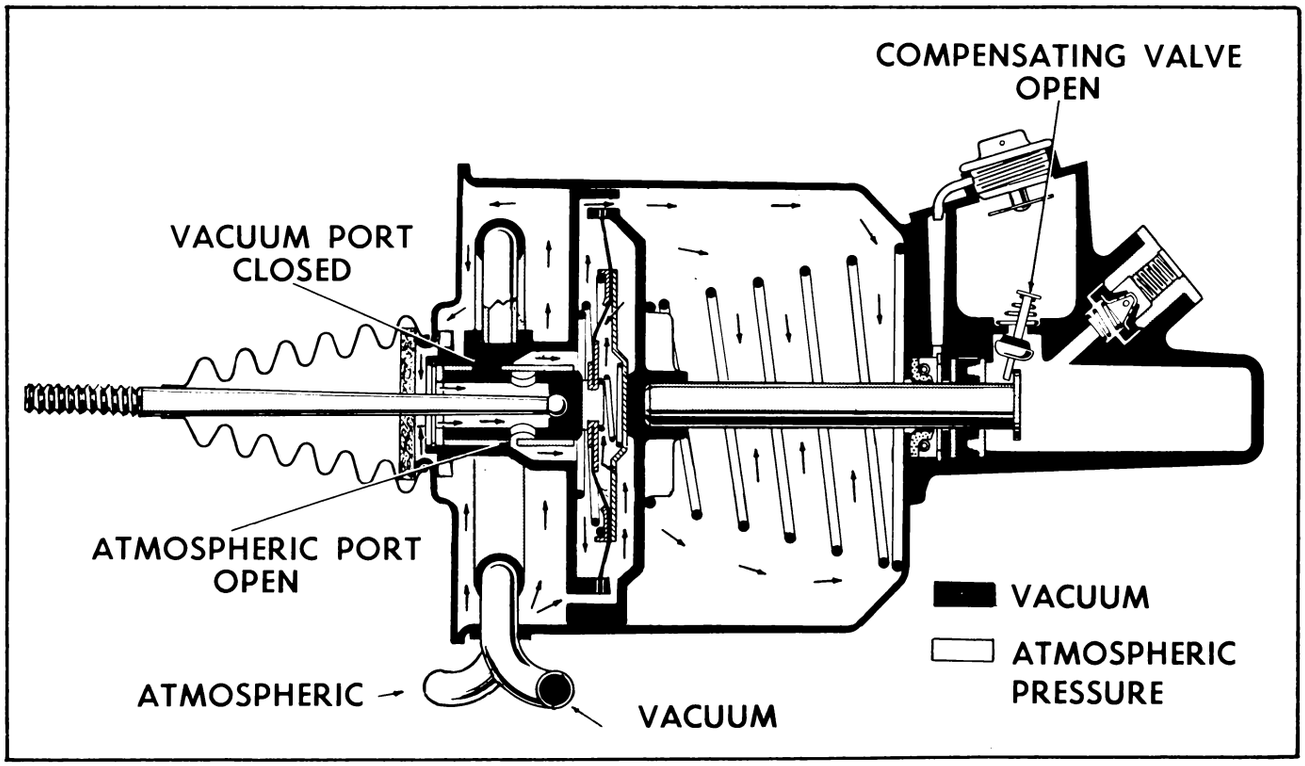


FIGURE 3
RELEASED POSITION

The master cylinder piston rod is in direct contact with the vacuum piston at all times. Any movement of the vacuum piston is transmitted to the master cylinder piston rod. The initial movement of the piston rod in the applied direction closes the compensating

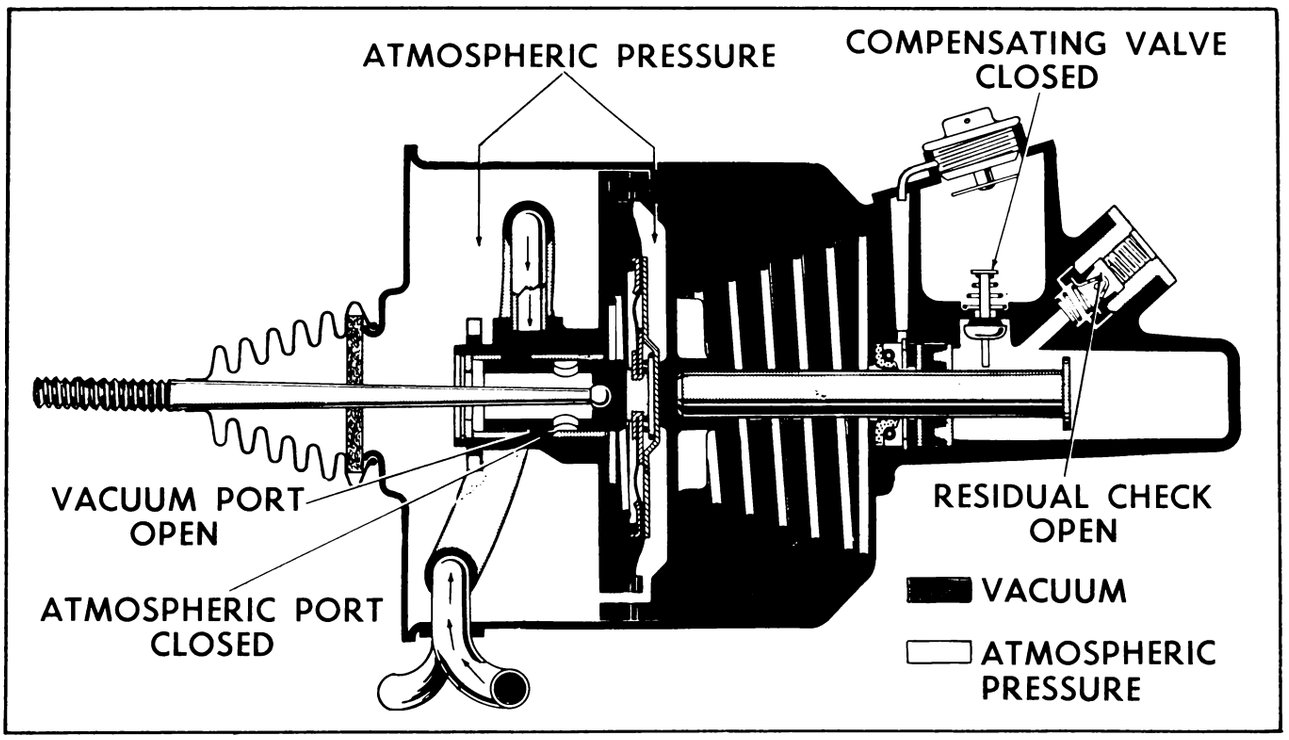


FIGURE 4
APPLIED POSITION

valve port sealing off the fluid reservoir from the hydraulic cylinder.

Further movement of the piston rod forces fluid out of the master cylinder, under pressure, through the hydraulic lines into the wheel cylinders to apply the brakes.

Holding Position (Fig. 5).

The left side of the reactionary diaphragm is open to engine vacuum upon brake application whereas the right side of the diaphragm is continually open to atmospheric pressure. When the operator holds a

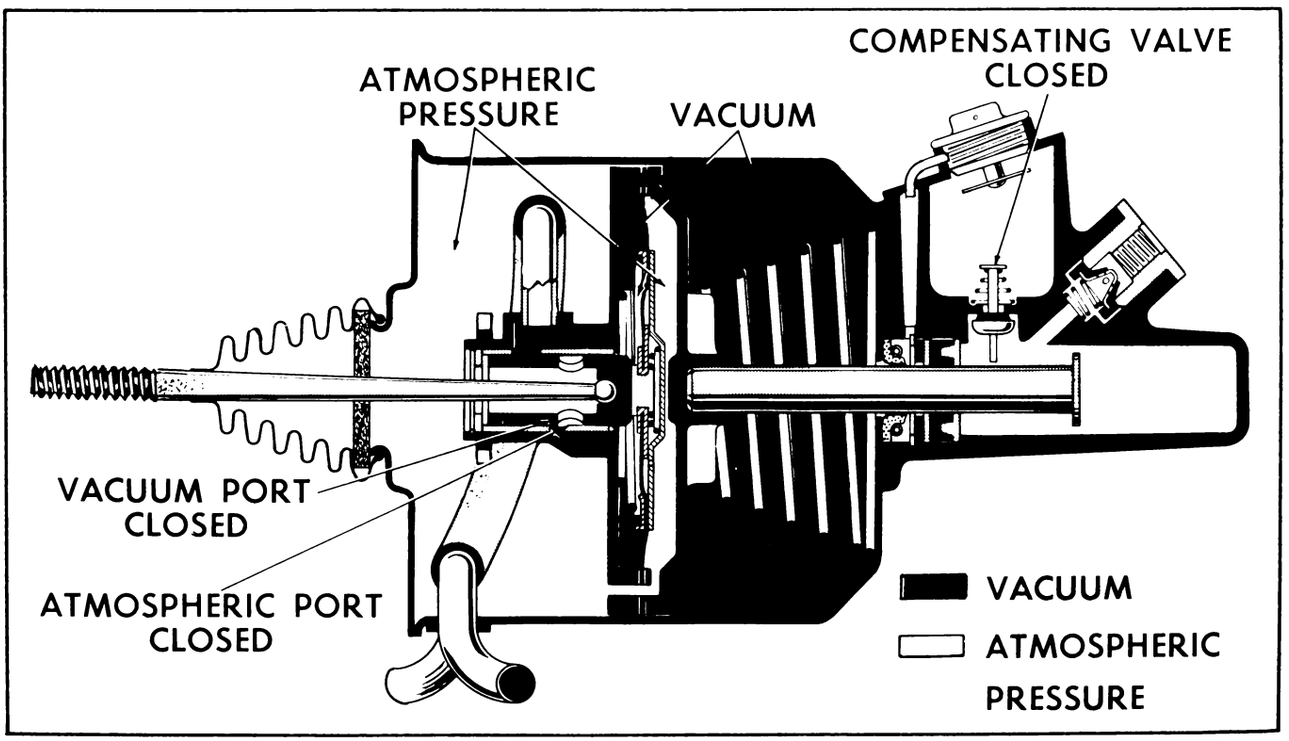


FIGURE 5
HOLDING POSITION

steady pressure on the brake pedal, the counter reactionary spring, together with the slide valve return spring, moves the slide valve in the opposite direction into the holding position. With the slide valve in the holding position, both the vacuum and atmospheric ports of the slide valve are closed, thus holding the brakes in any applied position.

Residual Check Valve

During application, the fluid passing through the master cylinder outlet causes the rubber lip of the residual check valve to expand allowing the fluid to pass to the lines and wheel cylinders. Upon release, the hydraulic pressure existing in the lines forces the residual check valve spring to compress moving the check valve slightly off its seat. As the pressure decreases, the residual check valve again seats holding a slight pressure in the lines and wheel cylinders preventing air from entering the system (Fig. 4).

DISASSEMBLY OF THE POWER BRAKE UNIT

Power Cylinder

NOTE: Always use extreme care in handling hydraulic system parts to prevent their coming in contact with mineral oil, gasoline, or kerosene. When overhauling the unit, always use repair kits.

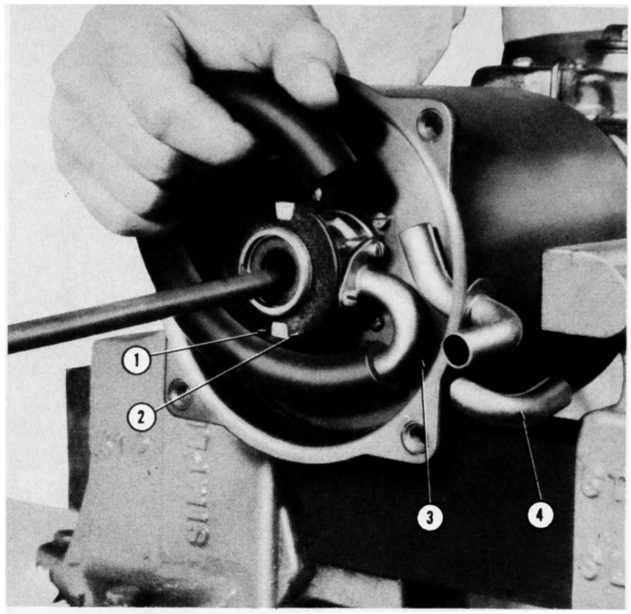
Secure the unit in a vise and remove the rubber dust guard and felt washer from the end plate and valve push rod.

Loosen the tabs on the end plate and remove the plate and gasket. Remove the vacuum hose from the tube attached to the shell of the vacuum cylinder (Fig. 6). Remove the vacuum and atmospheric pressure tube assembly attaching screw and pull the assembly from the vacuum cylinder shell (Fig. 6).

Pull push rod and power piston assembly out of the vacuum cylinder shell.

Compress the vacuum piston return spring far enough so that the "C" washer can be removed from the groove in the master cylinder piston rod. Then the retaining plate and vacuum piston return spring can be removed from the vacuum cylinder shell (Fig. 7). To insure proper reassembly, scribe a line across the outside of the vacuum cylinder shell and master cylinder housing. Remove the three screws attaching the vacuum cylinder shell to the master cylinder.

Lift off the vacuum cylinder shell and remove gasket and rubber ring. Push master cylinder piston rod into master cylinder and remove the leather seal from the master cylinder.



1. Rubber Stop Washer
2. Steel Stop Washer
3. Piston Plate and Sleeve Assembly Vacuum Tube
4. Cylinder Shell Vacuum and Atmospheric Pressure Tube Assembly

FIGURE 6
VACUUM HOSE REMOVAL

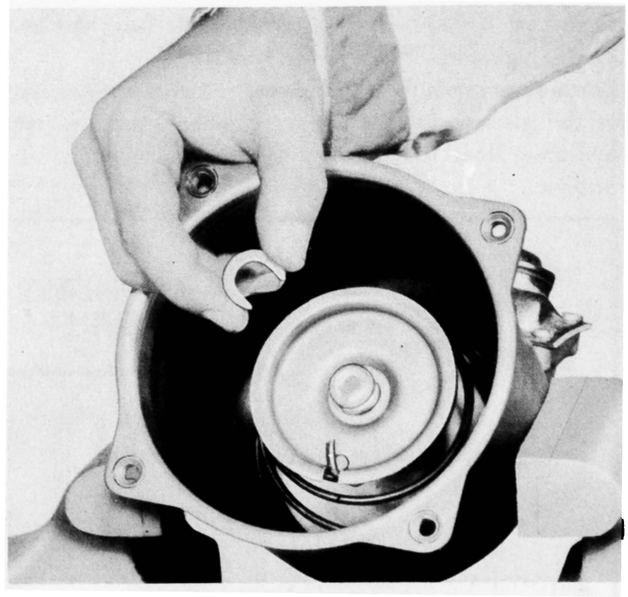


FIGURE 7
REMOVE "C" WASHER FOR VACUUM PISTON RETURN SPRING REMOVAL

Master Cylinder

Remove cover and gasket and drain fluid.

Mount the master cylinder in a vise. Use a 1⅛" socket and remove the compensating valve from the master cylinder.

At this time, also loosen the outlet and residual valve fittings but do not remove them (Fig. 2).

Remove stop washer retaining ring with Tool J-4245 "Truarc Pliers" (Fig. 8).

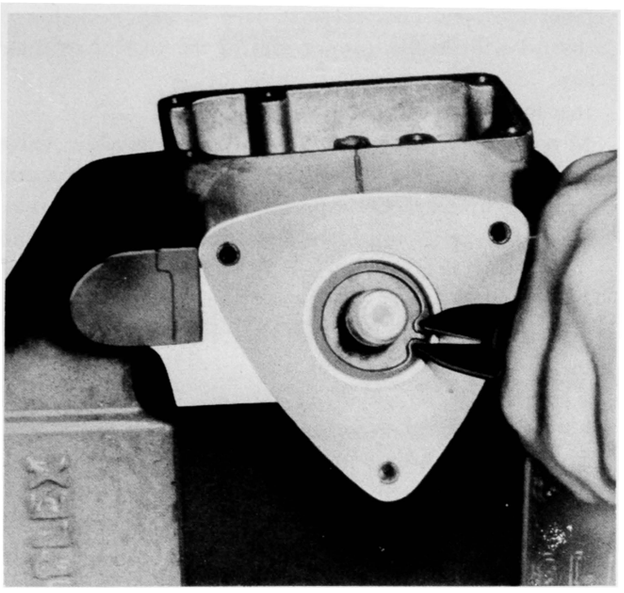
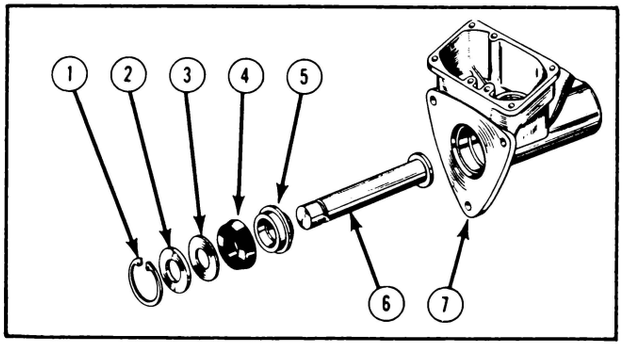


FIGURE 8
REMOVING STOP WASHER RETAINING RING

Pull master cylinder piston rod out of master cylinder. Remove stop washer, piston rod washer, cup, and cup retainer (Fig. 9).



1. Retaining Ring
2. Stop Washer
3. Piston Rod Washer
4. Cup
5. Cup Retainer
6. Piston Rod
7. Master Cylinder Housing

FIGURE 9
MASTER CYLINDER PISTON
ROD AND OPERATING PARTS

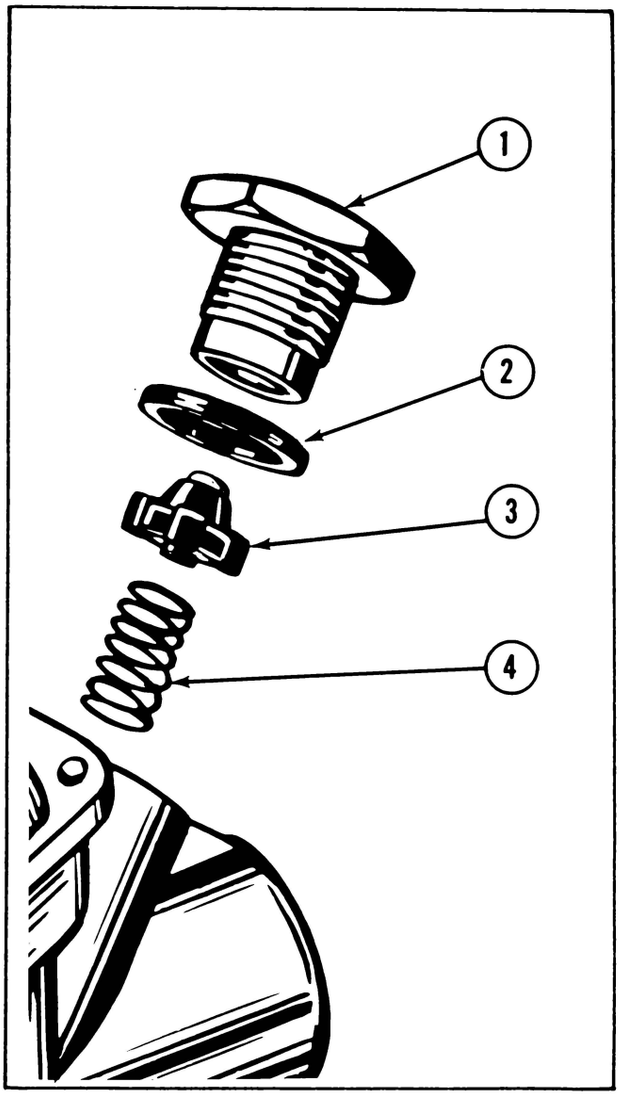
Remove master cylinder from vise; hold it upside down and remove the outlet fitting and residual check valve assembly (Fig. 10).

Clamp compensating valve in vise and remove spring retainer, spring valve, and rubber seal (Fig. 11).

Vacuum Piston and Push Rod Assembly

Remove snap ring from the groove in the valve sleeve end of the vacuum piston. Pull out the slide valve and push rod assembly (Fig. 12).

Remove the piston rubber stop washer and the steel stop washer from the sleeve end of the vacuum piston assembly. Remove rubber hose and tube assembly from vacuum piston (Fig. 6).



1. Outlet Fitting
2. Outlet Fitting Gasket
3. Residual Check Valve
4. Spring

FIGURE 10
RESIDUAL CHECK VALVE

To insure proper reassembly, scribe alignment marks on the front piston plate and the sleeve and piston plate assembly.

Remove the retainer plate screws and retainer plate, expanding ring, wick, packing plate, and packing from the sleeve and piston plate assembly.

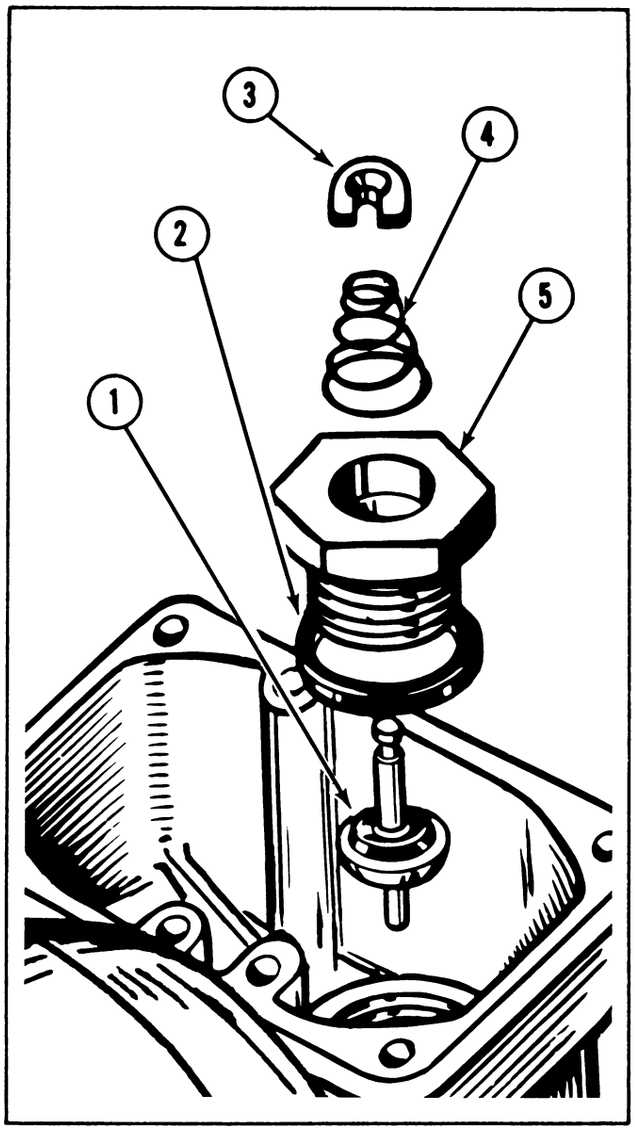
Remove the front piston plate from the sleeve and piston plate assembly. Remove reactionary spring diaphragm assembly and gasket (Fig. 13).

CLEANING AND INSPECTION OF POWER BRAKE UNIT

Thoroughly wash all parts in alcohol. Use air pressure to remove fluid from all internal passages.

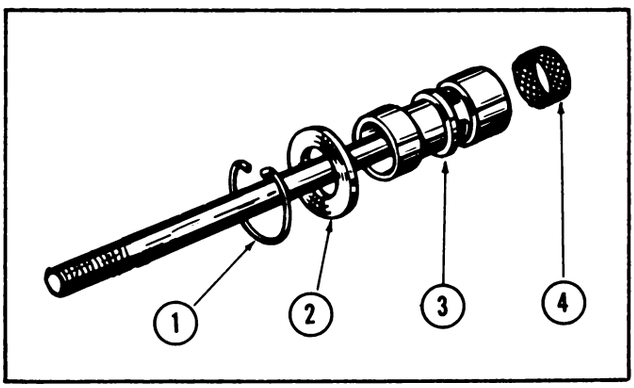
Inspect the vacuum cylinder shell bore for scoring, nicks, or dents. If slight, they may be removed with fine emery cloth.

Inspect master cylinder body. The bore, one inch down



1. Valve
2. Rubber Seal
3. Retainer
4. Spring
5. Fitting

FIGURE 11
COMPENSATING VALVE



1. Snap Ring
2. Stop Washer
3. Slide Valve and Push Rod Assembly
4. Screen

FIGURE 12
SLIDE VALVE ASSEMBLY

from the open end, must be free of any scratches or corrosion to insure proper seal of the master cylinder cup.

Inspect all gasket contact areas.

Never attempt to polish the valve sleeve, slide valve, or master cylinder piston rod. These parts are manufactured to very close tolerances, therefore, any refinishing will cause improper operation of the power unit.

REASSEMBLY OF POWER BRAKE UNIT

Master Cylinder

Place a new seal over threads of residual check valve fitting. Hold fitting in a vertical position and install the cone end of valve into fitting. Place the spring in the recess of the valve. With the master cylinder upside down, thread the residual check valve assembly into the master cylinder (Fig. 10).

Dip a new master cylinder cup in brake fluid and place the large side of the cup retainer to the lip side of the cup. Apply a film of brake fluid on the master cylinder piston rod and place retainer and cup onto the rod. Install the piston rod washer and piston rod stop washer against the cup (Fig. 9).

Clamp the master cylinder body in a vise and insert the piston rod assembly into the bore. Care must be taken to prevent cutting the cup.

Install new retaining ring in recess of cylinder bore; use Tool J-1215 "Truarc Pliers" (Fig. 8).

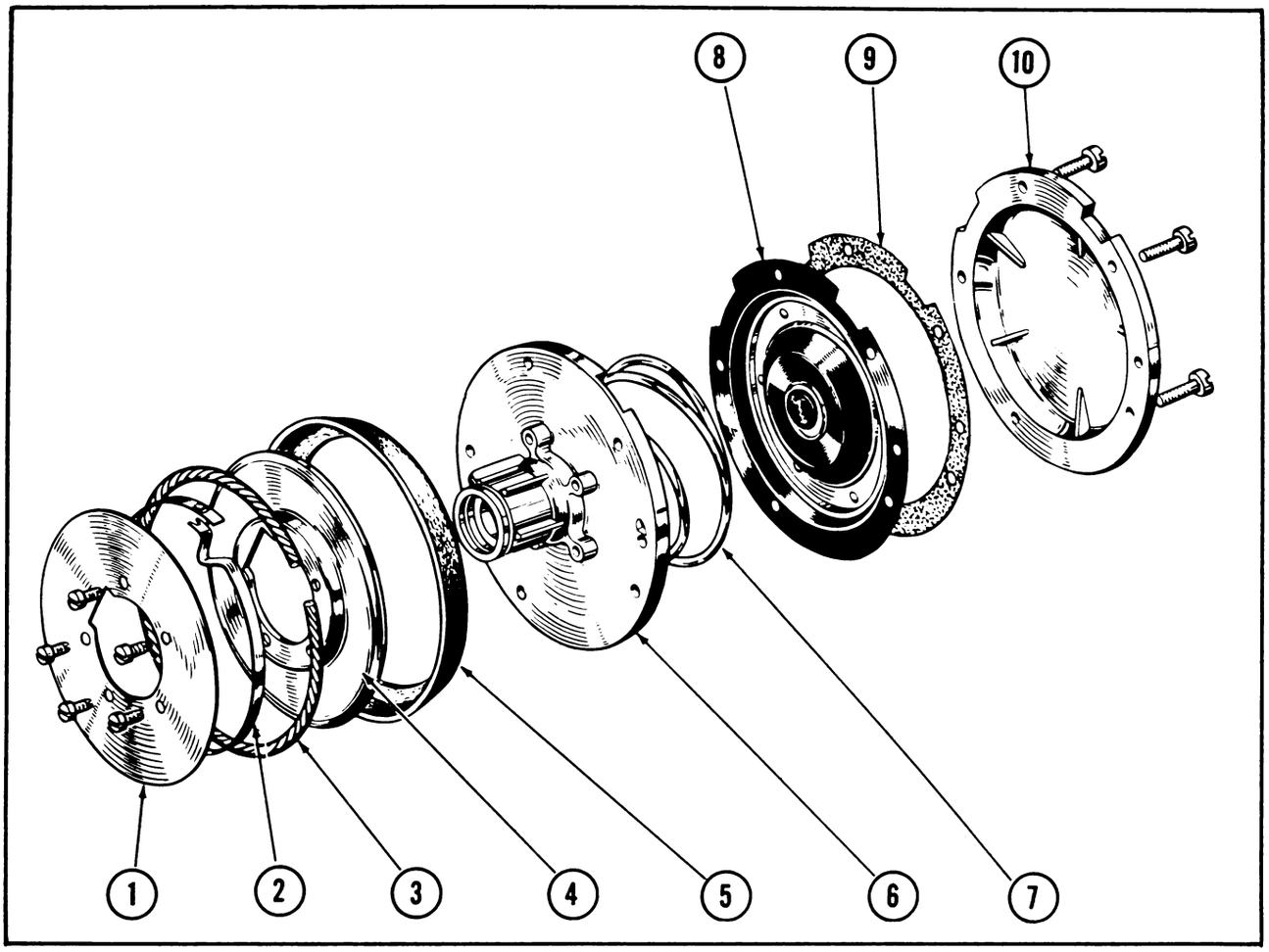
Place a new rubber seal on the compensating valve fitting. Insert stem of new compensating valve into the threaded end of fitting. Place a new spring over valve stem with the large coil into the fitting. Compress the spring and install a new spring retainer onto the valve stem (Fig. 11).

Before installing the compensating valve into the master cylinder, push the master cylinder piston rod into the master cylinder; hold in this position while threading the valve fitting in place. This will insure that the lower stem of the valve is on the correct side of the master cylinder washer riveted in the end of master cylinder piston rod. Tighten valve fitting to a torque of 125 to 250 inch pounds.

Manually operate the piston rod, observing compensating valve action. Initial movement of piston rod should immediately allow the valve to straighten and seal.

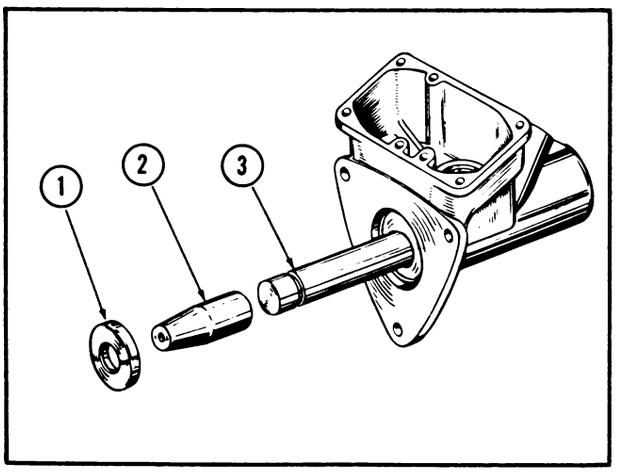
At this time, torque down the residual check valve fitting to 500-700 inch pounds of torque. Reinstall master cylinder outlet fitting, cover and new gaskets.

Pull out the master cylinder piston rod; install seal installing Tool J-5105, "Ambassador" Series, and J-5630 "Statesman" Series, over the end of the piston rod. Install a new seal over the end of the tool with the lip of the leather toward the master cylinder. Press in place and remove tool (Fig. 14).



1. Retainer Plate
2. Expanding Ring
3. Wick
4. Packing Plate
5. Packing
6. Piston Plate and Sleeve Assembly
7. Reactionary Spring
8. Reactionary Diaphragm
9. Gasket
10. Front Piston Plate

FIGURE 13
DISASSEMBLY OF POWER PISTON



1. Seal
2. Seal Installing Tool
3. Master Cylinder Piston Rod

FIGURE 14
INSTALLING MASTER CYLINDER LEATHER SEAL

Reassembly of Vacuum Cylinder

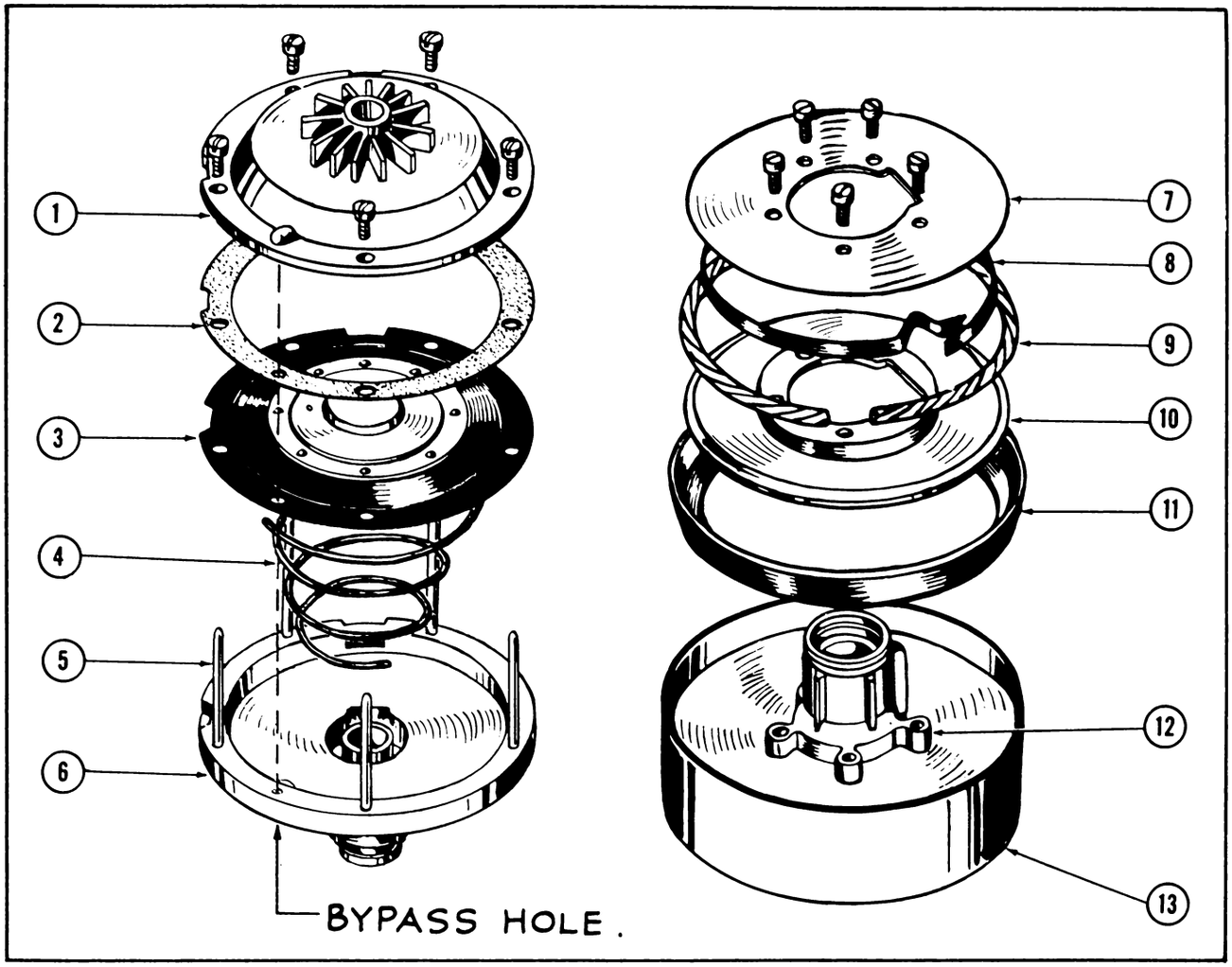
Place new hydraulic rubber seal in recess of master cylinder.

Position new paper gasket on master cylinder flange and reinstall the vacuum cylinder shell. Check scribed alignment marks to insure proper reassembly.

Place large coiled end of piston return spring in power cylinder with hook end of spring between cap screw and raised projection in the bottom of power cylinder. Place spring retainer over spring with hook end of spring in the notch on the retainer. Compress spring and install new "C" washer in groove of the master cylinder piston rod.

Reassembly of Power Piston

Place sleeve and piston plate assembly on bench; install guide pins J-5404 (Fig. 15). Center reactionary spring on plate with small coil against plate.



1. Front Piston Plate
2. Gasket
3. Reactionary Diaphragm
4. Reactionary Spring
5. Guide Pins J-5405
6. Piston Plate and Sleeve Assembly
7. Retainer Plate
8. Expanding Ring
9. Wick
10. Packing Plate
11. Packing
12. Piston Plate and Sleeve Assembly
13. Piston Assembly Ring J-5406

FIGURE 15
REASSEMBLY OF POWER PISTON

Place diaphragm assembly on top of spring centering the large coil of the spring in the ring plate of diaphragm assembly. Place new gasket and front piston plate on top of diaphragm assembly.

Check scribed alignment marks and make sure by-pass holes are aligned properly.

Compress spring and remove guide pins one at a time and replace with screws. Before tightening, check the centering of the diaphragm assembly. Torque screws to 25-40 inch pounds.

Place piston assembly ring Tool J-5406 on a bench and install the sleeve and piston plate assembly into ring with sleeve up (Fig. 15).

Position new leather packing on the piston with the lip up; place packing plate inside packing aligning holes in packing plate to holes in piston plate.

Cut a new cotton wick to correct length. Dip it in vacuum cylinder oil and place it inside the leather packing.

Install expanding packing ring so that projections will point up and into wick. Compress lock end of ring and engage notch with hook near the other end. Place retainer plate over the assembly; align holes and cut-out in plate.

Install and tighten the five screws sufficiently to prevent any vacuum leakage past the leather packing.

Attach tube to piston assembly using a new gasket (Fig. 6).

Install new vacuum hose in such a manner that the hose is coiled against the piston plate.

Place the steel stop washer and a new rubber stop washer on the shoulder at the sleeve end of the piston.

The adhesive side of the rubber stop washer should be softened with gasoline to make it adhere to the steel stop washer (Fig. 6).

Install a new screen on slide valve and place slide valve and valve rod into the sleeve of the piston.

CAUTION: Do not lubricate slide valve or sleeve assembly.

Install stop washer and retaining ring. Make sure that the ring is seated into the ring groove of piston hub (Fig. 12).

Apply a thin film of vacuum cylinder oil to the inside of the vacuum cylinder.

Remove piston assembly ring J-5406 from the piston assembly. Push the piston assembly into the vacuum cylinder. Align the end of the vacuum hose with the hole at side of the vacuum cylinder shell for vacuum inlet tube.

When aligned, engage the hooked end of the piston return spring between the webs on the back side of the piston. Operate the piston, by hand, several times making sure it will maintain its correct alignment during operation. If the alignment is not maintained, it will be necessary to relocate the piston by rotating.

Install the tube and plate assembly using a new gasket.

Install the vacuum hose; again operate piston checking to insure that the vacuum hose does not contact the vacuum cylinder shell during the stroke.

Install the end plate using a new gasket. Secure by crimping the locking tabs.

Assemble a new felt valve rod washer on valve rod.

Dip small end of rubber valve rod guard into brake fluid. Install on valve push rod and attach to the end plate.

MAINTENANCE

1,000 Miles	Check the brake fluid level. Fill to within ½" of filler opening.
5,000 Miles	Check all vacuum and brake fluid connections for leakage.
10,000 Miles	Check brake pedal linkage; check linings and drum condition. Clean air cleaner. Clean check valve on manifold.

TESTING POWER BRAKE SYSTEM

Road test the car by applying the brakes at the speed of approximately 20 M.P.H. If the vehicle does not stop evenly and quickly and the pedal has a spongy action, it is an indication that air is present in the hydraulic system. Bleed the system in the usual manner.

With the engine stopped and the transmission in neutral, make several pedal applications to eliminate all vacuum from the system. Depress the brake pedal and hold in this position. The pedal should hold a steady position. If the pedal gradually falls away under this pressure. the hydraulic system is not functioning properly.

Depress the pedal and hold in that position while the engine is started. If the vacuum system is operating correctly. the pedal will tend to fall away under the foot pedal pressure and at the same time less pressure will be required to hold the pedal in that position. If this action is not felt, the vacuum power system is not operating properly.

POSSIBLE DIFFICULTIES AND CORRECTIONS

CONDITIONS	PROBABLE CAUSE	CORRECTION
Hard Pedal (Mechanical Condition)	Glazed Linings	Clean Up Linings and Adjust
	Grease or Brake Fluid on Linings	Find Cause of Leak and Correct. Reline Brakes and Adjust if Necessary
	Bind in Pedal Linkage	Free Up Linkage
Hard Pedal (Vacuum Failure)	Vacuum Check Valve Not Functioning Properly	Clean or Replace as Necessary
	Collapsed Vacuum Hose	Replace Hose
	Plugged Vacuum Fittings	Clean and Eliminate Source
	Reserve Tank Leaking	Replace Tank

BRAKE SECTION

CONDITIONS	PROBABLE CAUSE	CORRECTION
Hard Pedal (Power Unit)	Internal Vacuum Hose	If Loose, Replace. Clean Interior of Power Cylinder Shell
	Vacuum Leaks in Unit Caused by Loose Piston Plate	Tighten Plate Screws
	Faulty Rubber Stop in Reactionary Diaphragm	Replace Diaphragm
	Brake Drum Cracked	Replace Drum
	Compensating Valve Leak	Replace Compensating Valve Assembly. Bleed and Refill Master Cylinder
	Master Cylinder Plunger Seal Leak	Recondition Master Cylinder. Bleed and Refill Master Cylinder
Grabbing Action in Brakes	Grease or Brake Fluid on Linings	Find Cause of Leak and Correct. Reline Brakes and Adjust if Necessary
	Rough or Scored Drums	Clean or Turn the Drum
	Reactionary Diaphragm Leaking	Replace Diaphragm
	Counter Reactionary Spring Broken	Replace Spring
	Restricted Diaphragm Passage	Check that the By-Pass Hole in Gasket is Aligned with Hole in Casting. Clean the Passage
	Vacuum Valve Operation	Clean the Valve. Do Not Oil.
Pedal Goes to Floor	Brake Adjustment	Major Brake Adjustment
	Air in the Hydraulic System	Bleed and Refill Master Cylinder
	Brake Fluid Leak	Locate Source and Correct. Bleed and Refill Master Cylinder
	Brake Drum Cracked	Replace Drum and Adjust
	Compensating Valve Leak	Replace Compensating Valve Assembly. Bleed and Refill Master Cylinder
	Master Cylinder Plunger Seal Leak	Recondition Master Cylinder. Bleed and Refill
Brakes Do Not Release Properly	Improper Adjustment	Perform Major Brake Adjustment
	Pedal Linkage Binding	Free Up Linkage
	Friction in the Master Cylinder Piston Rod	Replace Seal and Bleed System
	Residual Check Valve	Replace Valve and Bleed System
	Interference in the Vacuum Piston Stroke	The Rubber Vacuum Line from the Valve Should Maintain One Position During the Piston Stroke. Check by Pushing the Piston In and Out Several Times. If the Hose Moves, Correct by Relocating the Piston on the Return Spring

BRAKE SECTION

CONDITIONS	PROBABLE CAUSE	CORRECTION
Brakes Do Not Release Properly	Vacuum Valve Sticking	Clean the Valve. Do Not Oil Replace Valve and Bleed System
	Compensating Valve Sticking	Replace Spring
	Piston Return Spring Broken	Replace Spring
	Brake Shoes Return Spring Broken	Lubriplate Points of Contact on Packing Plate
	Brake Shoes Bind on Packing Plate	

BRAKE SPECIFICATIONS

Series	"Ambassador"	"Statesman"	"Rambler"
Type of Mechanism	Lockheed Hydraulic	Lockheed Hydraulic	Lockheed Hydraulic
Make	Bendix Servo	Bendix Floating Shoe	Bendix Floating Shoe
Total Foot Braking Area	171 Sq. Inch	150.3 Sq. Inch	103.6 Sq. Inch
Lining Size — Width x Length			
Primary — Front	2" x 9"	2½" x 9⅞"	2" x 9⅞"
Rear	2" x 9"	2" x 9⅞"	1¼" x 8 27/64"
Secondary — Front	2½" x 11 3/32"	2¼" x 7⅝"	1¾" x 7 11/16"
Rear	2" x 11 3/32"	1¾" x 7⅝"	1" x 8 27/64"
Clearance, Toe, Inches	.015"	Eccentric Adj.	Eccentric Adj.
Clearance, Heel, Inches	.015"	Eccentric Adj.	Eccentric Adj.
Pedal Free Play	¼" to ½"	¼" to ½"	¼" to ½"
Drum Diameter. Inches	10"	9"	Front 9" Rear 8"
Wheel Cylinder	Straight Bore	Straight Bore	Straight Bore
Front Cylinder Bore, Diameter	1 1/16"	1 1/16"	1"
Rear Cylinder Bore, Diameter	15/16"	⅞"	13/16"
Master Cylinder Bore. Inches	1⅛"	1"	1"
Piston Clearance, Wheel and Master Cylinder, Inches	.001" to .003"	.001" to .003"	.001" to .003"
Master Cylinder Piston Rod Diameter (Power Brakes)	21/32"	9/16"	

WHEELS AND TIRES

	"Ambassador"	"Statesman"	"Rambler"
Wheel Size	15"	15"	15"
Tire Size Standard	7.10 x 15"	6.70 x 15"	5.90 x 15" (Super and Deluxe Series) 6.40 x 15" (Custom Series)
Tire Pressure, Cold, Front and Rear Wheels	24 Lbs.	24 Lbs.	24 Lbs.

REAR AXLE—PROPELLER SHAFT SECTION

REAR AXLE SPECIFICATIONS

	"Ambassador" Series	"Statesman" Series	"Rambler" Series
Type	Semi-Floating	Semi-Floating	Semi-Floating
Drive Gear Type	Hypoid	Hypoid	Hypoid
Ring Gear and Pinion Backlash	.002" — .006"	.002" — .006"	.002" — .006"
Axle Shaft End Play	.002" — .004"	.002" — .004"	.002" — .004"
Pinion Shaft Bearing Tension	15" Lbs. — 18" Lbs.	12" Lbs. — 14" Lbs.	12" Lbs. — 14" Lbs.
Pinion Bearing Adjustment	Shims	Shims	Shims
Differential Side Bearing Pre-Load	.004" — .006"	.004" — .006"	.004" — .006"
Differential Side Bearing Adjustment	Shims	Shims	Shims
Axle Shaft End Play Adjustment	Shims	Shims	Shims
Lubrication Capacity	4 Pts.	3 Pts.	3 Pts.
Type of Lubricant	SAE 90 HYPOID*	SAE 90 HYPOID*	SAE 90 HYPOID*
Rear Axle Ratio (Standard)	4.1-1 (10-41)	4.4-1 (8-35)	3.8-1 (9-34)
Rear Axle Ratio (With Overdrive)	4.4-1 (9-40)	4.9-1 (8-39)	4.4-1 (8-35)
Rear Axle Ratio (With Automatic)	3.2-1 (13-41)	3.6-1 (12-43)	3.3-1 (13-43)

**NOTE: Hypoid rear axle lubricant is to be used in all new assemblies or following the installation of replacement parts.*

After the rear axle has been run-in, or at the recommended drain and re-fill period, an SAE #90 All Purpose, Multi-Purpose, or other brand designation lubricant may be used as long as it is suitable for Hypoid Rear Axle Service. Naturally, the results of such use are the responsibility of the lubricant supplier or servicing dealer.

PROPELLER SHAFT AND UNIVERSAL JOINTS

1954 "Rambler" Series—108" Wheelbase, Standard and Overdrive Equipped

A two-piece propeller shaft with a rubber insulated center bearing supported by a crossmember is incorporated on the 108" wheelbase, standard and overdrive equipped "Rambler" Series.

Two types of propeller shafts will be used.

The Spicer type universal joints are provided with lubrication fittings. Lubricate at 5,000 mile intervals with SAE #140 Mineral oil. Use hand gun only.

Lubrication fittings are not provided on the Mechanics type. Disassemble the joints at 15,000 mile intervals. Lubricate with Chassis lubricant.

Propeller Shaft Removal

Remove the propeller shaft coupling nut from the coupling. Tap the coupling off the pinion shaft splines with a soft faced hammer.

Remove the nuts from the propeller shaft center bearing retainer studs (Fig. 1).

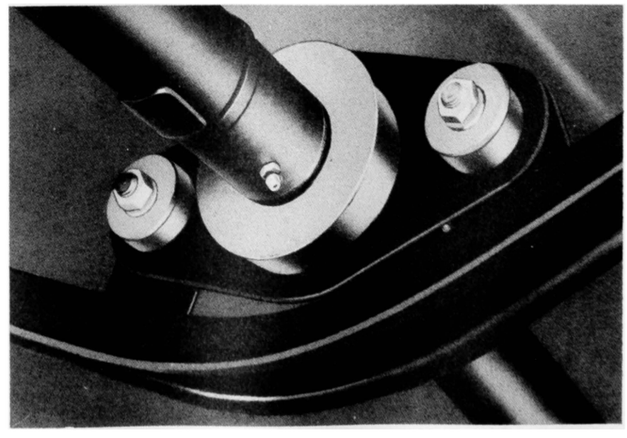


FIGURE 1
PROPELLER SHAFT CENTER BEARING RETAINER

Disconnect the crossmember from the support brackets at the side sills.

Remove the crossmember from the car.

The propeller shafts and center bearing can then be removed from the car as an assembly (Fig. 2).

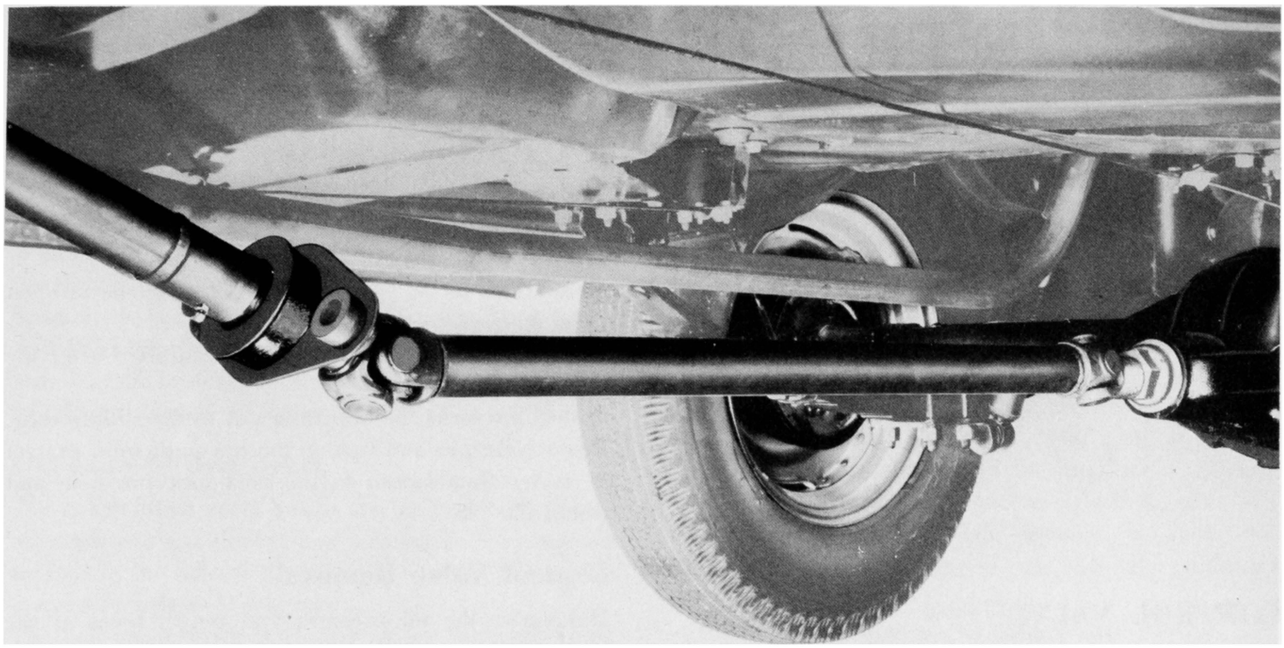


FIGURE 2
PROPELLER SHAFTS AND CENTER BEARING REMOVAL

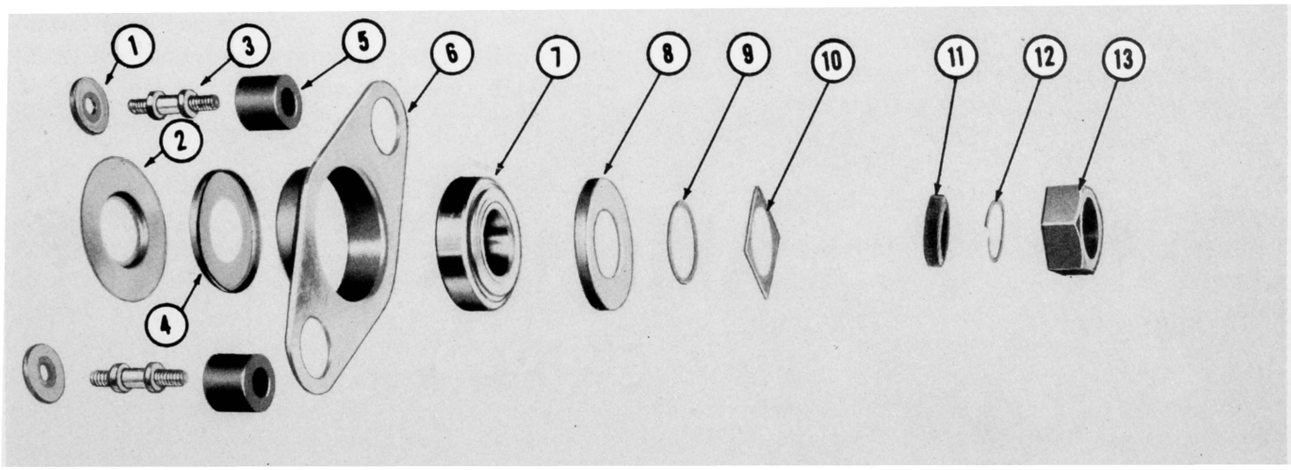
Disassembly of Propeller Shaft Center Bearing

Place the front propeller shaft in a vise. Turn back the propeller shaft bearing lock to allow the propeller shaft center bearing lock nut to be removed.

The rear propeller shaft can now be removed by sliding the splined slip joint from the front propeller shaft. The lock nut will still remain on the splined slip joint. Remove the felt washer and the felt washer retainers. The nut can then be removed from the slip joint. The propeller shaft center bearing spacer, cover, center bearing and retainer, bearing cover, and dust shield can now be removed.

The center bearing can be removed from the center bearing retainer with a brass drift.

NOTE: The yokes of the universal joints must be in alignment when the propeller shaft is reassembled.



1. Washer
2. Dust Shield
3. Retainer Stud
4. Bearing Cover
5. Insulator
6. Retainer
7. Center Bearing
8. Bearing Cover
9. Spacer
10. Lock Nut
11. Felt Washer
12. Felt Washer Retainer
13. Lock Nut

FIGURE 3
PROPELLER SHAFT CENTER BEARING AND RETAINER—EXPLODED VIEW

FRONT SUSPENSION AND STEERING GEAR SECTION

("AMBASSADOR")

POWER STEERING
"Ambassador" Series

The power steering system is of the linkage type and consists of a control valve, power cylinder, steering linkage, a belt driven pump, an oil reservoir, and the necessary connecting oil hoses and lines.

The units of the power steering system are separate and may be removed and serviced as individual assemblies.

CONTROL VALVE

The control valve assembly consists of a housing and a sliding valve called a spool. The valve assembly is attached to the left end of the drag link (or cross tube) and is operated by the Pitman Arm in the following manner:

The Pitman Arm ball stud is retained in a sliding socket tube inside the steering linkage tube. Protruding from the ball seat adjusting nut of the socket tube is a long special bolt. The spool of the control valve is attached to this bolt so that any movement of the sliding tube is transmitted to the control valve spool. The spool is restricted to a movement of .060" to the left and right from its centered position by a recess in the spacer between the control valve and the linkage cross tube. The spool position in the valve housing is maintained by a spacer sleeve on the special bolt (Fig. 1).

The Pitman Arm ball seat may be adjusted after the control valve is removed.

A steel pin locks the adjusting nut to the sliding tube. Remove the pin and tighten the nut until solid contact is made; then loosen to the next lock pin hole and install the pin.

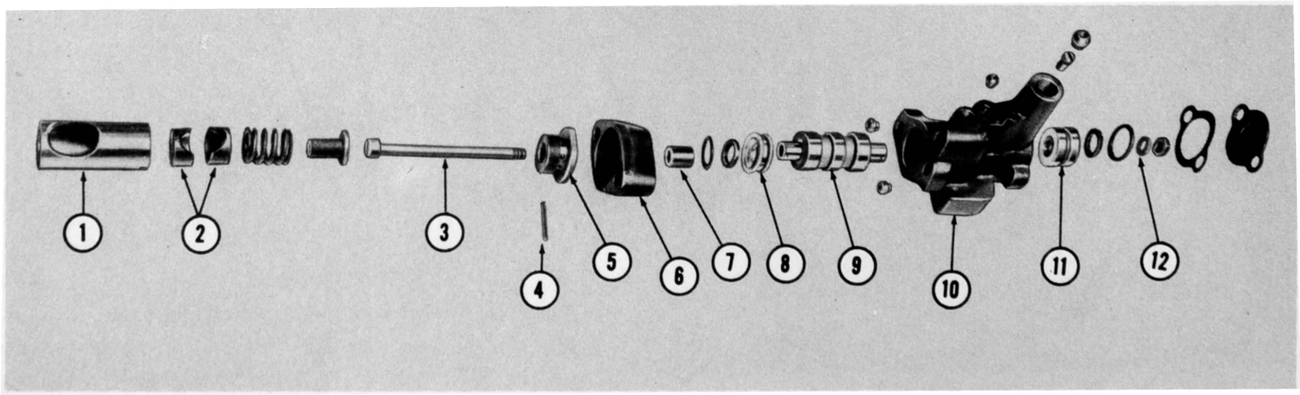
Control Valve Removal

Disconnect the oil pressure and return hoses at the control valve and the two lines connecting the valve to the power cylinder.

Remove the cap and gasket from the outer end of the control valve and the self-locking nut and special washer located under the cap.

The control valve may now be removed from the steering linkage by removing the two valve to linkage attaching bolts.

NOTE: The control valve housing bore and the control valve spool are machined to extremely close tolerances and are select fitted at time of assembly. Therefore, the control valve housing and spool will be supplied for service in matched sets only.



1. Socket Tube
2. Ball Stud Seats
3. Special Bolt
4. Lock Pin
5. Stop Screw
6. Adapter
7. Spacer
8. Large Bore Bushing
9. Spool
10. Housing
11. Small Bore Bushing
12. Washer

FIGURE 1
EXPLODED VIEW POWER STEERING CONTROL VALVE

Control Valve Oil Seals

Machined bushings are located at each end of the spool in the valve housing. The bushing at the outer end is longer and has a smaller bore size than the bushing at the inner end.

Each bushing contains an "O" ring in a groove in the outer diameter of the bushing and a "V" type seal in a groove in the bore. The seals are installed with the lip toward the spool.

Special seal installing guides J-5517-1 (for large bore) and J-5517-2 (for small bore) must be used when assembling the bushings on the spool in the valve housing to prevent damage to the seals.

Oil Line Fitting Seats

The brass fitting seats are of the pressed-in type and are replaceable in the event of a fitting leak by tapping threads in the hole of the seat and then pulling, using a screw or bolt as a jack screw.

The ball check valve is located under the large brass fitting seat and is accessible after removing this seat. The valve is screwed into position and may be readily replaced in the event of a leak.

A 10-24 N.C. tap can be used in the 1/4" line fitting seats and a 5/16-18 N.C. for the larger seat.

When installing new seats, align the seat in its bore and press into place using the hose or tube fitting as a pressing tool.

CAUTION: Thoroughly clean the control valve using air pressure to remove all traces of foreign particles.

Reassembling the Control Valve

Lubricate all the parts as they are assembled into the control valve housing.

Install the control valve spool in the housing, placing the small diameter toward the outer end. Then install the bushings using the seal guide tools to protect the seals.

Slide the control valve spacer and control valve assembly onto the bolt of the linkage. Be sure the spacer sleeve is in place on the special bolt. Install and tighten the attaching bolts.

Install the special flat washer and a new self-locking nut on the end of the bolt at the outer end of the control valve. This nut should be tightened until there is just a slight amount of side play.

NOTE: If the nut is too tight, the spool may bind in the housing; if it is too loose, there will be excessive lost motion before the spool will move.

Then reinstall the gasket, cap, and oil lines.

POWER CYLINDER

The power cylinder is a two-way hydraulic cylinder attached to linkage by means of an adjustable ball and socket joint. It is also attached to a bracket on the right body side sill with a bayonet type mounting (Fig. 2).

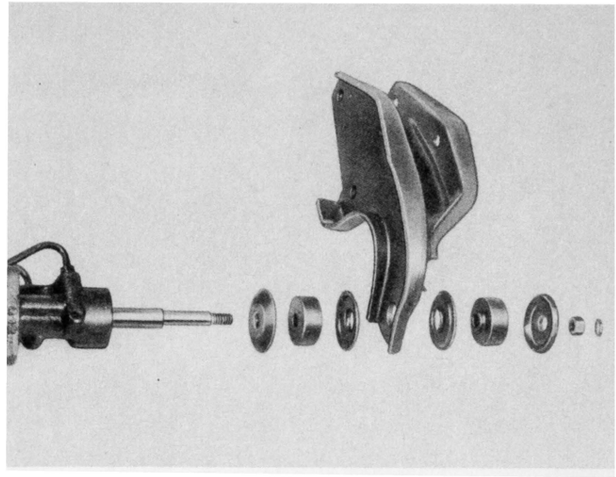


FIGURE 2
POWER CYLINDER TO BRACKET ASSEMBLY SEQUENCE

The bracket is attached to the side sill by the three idler arm bracket attaching bolts.

A rubber stone protector is installed on the cylinder to prevent stones from damaging the power cylinder and causing internal binding or leaks.

Power Cylinder Removal and Disassembly

Disconnect all lines from control valve assembly; the power cylinder from the side sill bracket, and loosen the ball joint adjusting screw.

The power cylinder may now be removed as an assembly.

Remove the oil lines from the adapter (rod end of cylinder). Then remove the adapter to cylinder bolts and pull the adapter out of the cylinder. The power cylinder rod and piston may then be removed from the cylinder.

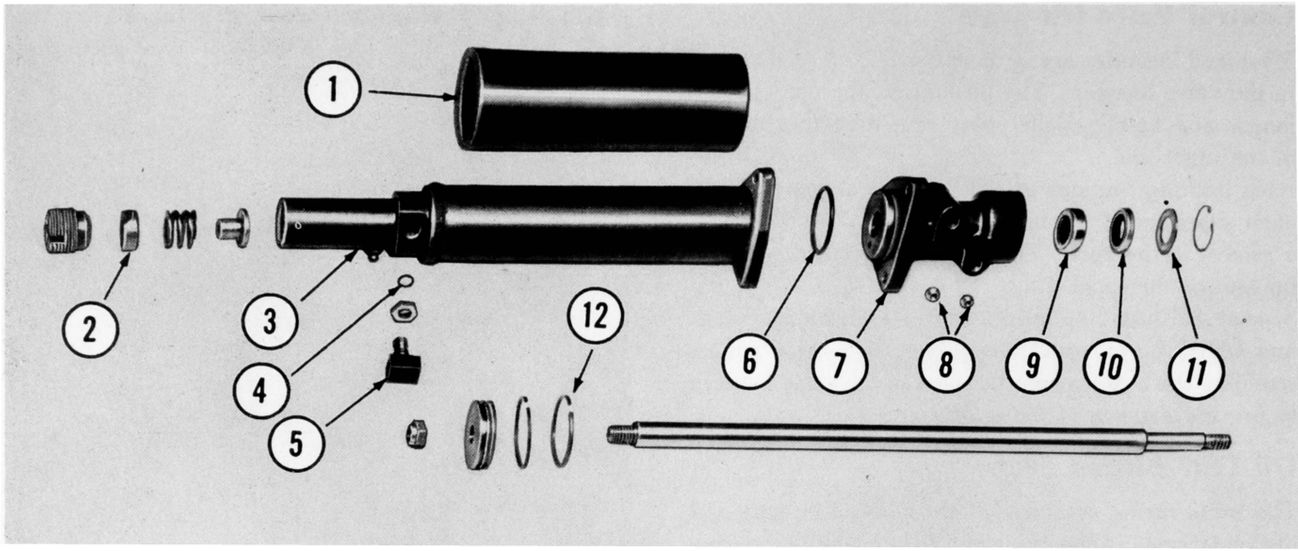
Oil Seals

A bronze scraper washer and a leather seal, with the lip toward the outside, are installed in the adapter to scrape and wipe dirt from the power cylinder rod before the dirt can contact the rubber "V" type oil seal (Fig. 3).

After removing the special type snap ring from the rod end of the adapter, the seals may be removed. Both the scraper and leather seal are easily removed; however, the oil seal is a fairly tight fit in the adapter due to an "O" ring which seals the outer diameter of the seal. Therefore, oil seal remover J-5503 should be used to remove this oil seal.

An "O" ring, $1\frac{11}{16}$" O.D., is also used in lieu of a gasket to seal the adapter and cylinder joint.

An "O" ring, $\frac{7}{16}$" O.D., is located under the "Tee"



1. Stone Protector
2. Ball Seats
3. Cylinder
4. "O" Ring 7/16" O.D.
5. "Tee" Fitting
6. "O" Ring 1 1/16 O.D.
7. Adapter
8. Fitting Seats
9. Oil Seal
10. Dust Seal
11. Scraper Washer
12. Piston and Rings

FIGURE 3
POWER CYLINDER ASSEMBLY SEQUENCE

fitting lock nut to seal this fitting. There are two sets of threads separated by an undercut. When reinstalling the "Tee" fitting, install the lock nut on the set of threads adjacent the fitting with the bottom of the nut flush with the undercut. Then install the "O" ring locating the ring in the undercut area below the lock nut. Screw the "Tee" fitting into the adapter using the lock nut as a depth gauge and correctly align with the connecting tubing.

Tighten the lock nut to hold the fitting in the correct position. Locating and tightening the fitting in the above manner is important to prevent damage to the "O" ring and provide adequate sealing.

Piston and Rings

The power cylinder piston contains two rings and is attached to the rod with a self-locking nut.

Inspect the rings for scoring or points of improper contact, and the piston for scratches or burrs in the ring grooves. Check the ring fit in the cylinder bore. The end gap should be not over .007" or less than .001". The fit in the piston groove should be not less than .001" or more than .003". When replacing rings for leakage and no abnormal wear is detected, it is suggested that a new piston be installed as a leak may exist between the ring and groove of the piston.

Oil Fitting Seats

The oil fitting seats may be removed and replaced in the same manner as the seats on the control valve.

OIL PUMP

Disassembly and Assembly Procedure

The pulley is keyed to a straight shaft and retained by a bolt and washer. To remove the pulley, remove the retaining bolt and tap lightly on the end of the pump shaft while pulling on the pulley.

Remove the pump body to cover retaining cap screws and separate the pump body from the cover. When separating these parts, be sure the pulley shaft is pointing down to prevent accidentally dropping the pump rotors (Fig. 4).

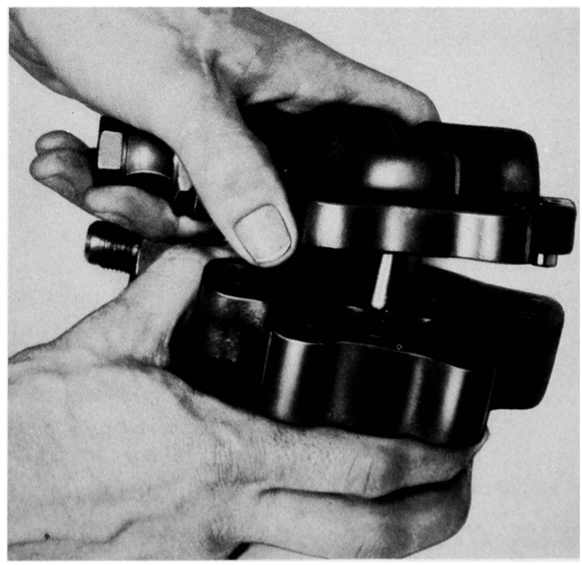


FIGURE 4
SEPARATING PUMP COVER FROM BODY

FRONT SUSPENSION AND STEERING GEAR SECTION ("AMBASSADOR")

Mark the rotors before removing them from the pocket to insure reassembling with the faces in the same relative position. The radial location is unimportant. The rotors become lapped-in during normal operation and require this location attention to insure normal and quiet operation.

The inner or drive rotor is keyed to the pump shaft with a special round pin type key (Fig. 5).

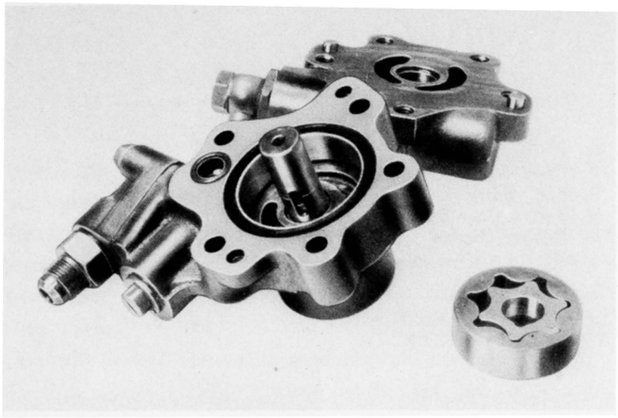


FIGURE 5
OIL PUMP — ROTORS REMOVED

After the shaft has been removed and the rotors cleaned, nest the rotor in the pocket in the same operating position and inspect for proper clearances. The tooth nose clearance should not exceed .008" clearance and the end clearance (clearance between face of rotor and pump cover) should not exceed .0025" clearance. If in either case the clearances are excessive, the rotor set should be replaced.

NOTE: Wire gauges may be used for these checks.

To remove the pump shaft bearing and oil seal, first remove the bearing snap ring using pliers J-4245. The shaft and bearing may then be removed as an assembly (Fig. 6).

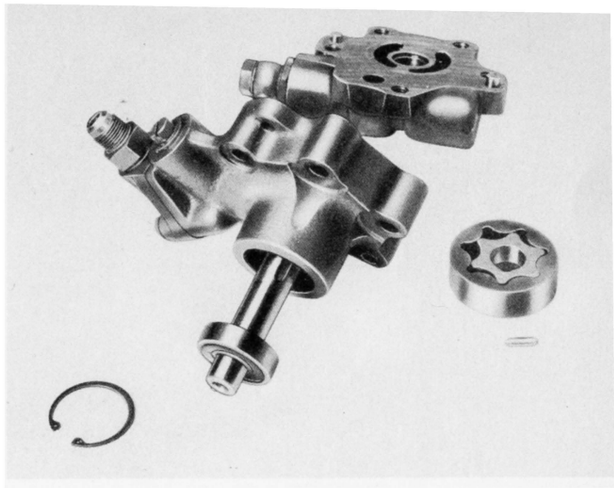
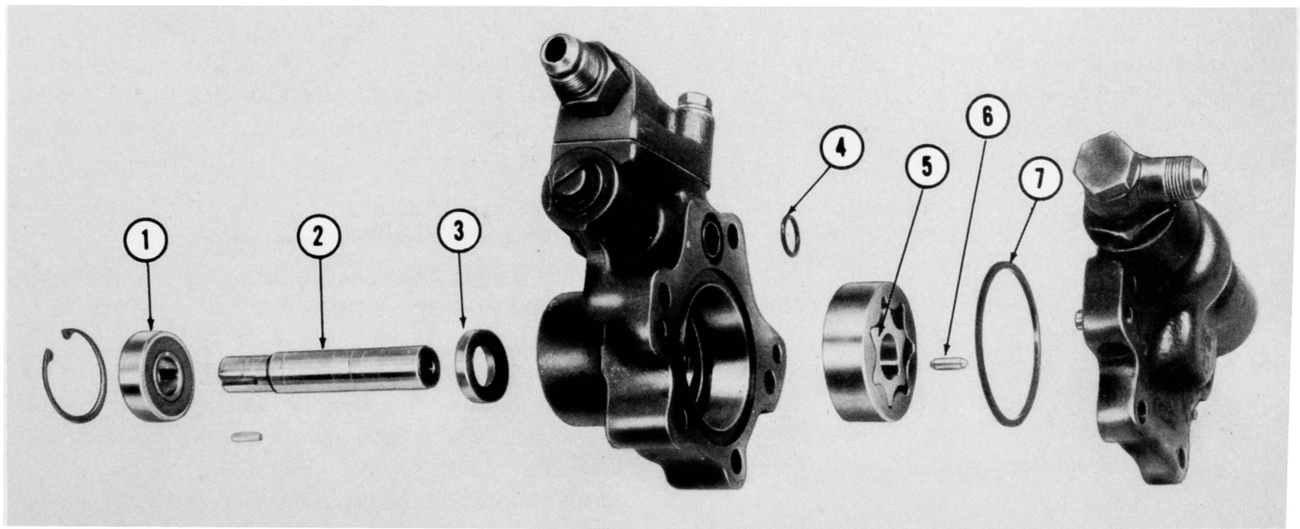


FIGURE 6
PUMP SHAFT AND BEARING PARTIALLY REMOVED

The factory sealed lubricated ball bearing is a tight pressed fit on the shaft. To install a new bearing, use bearing installer J-5110 and press the bearing tight against the shoulder of the shaft.

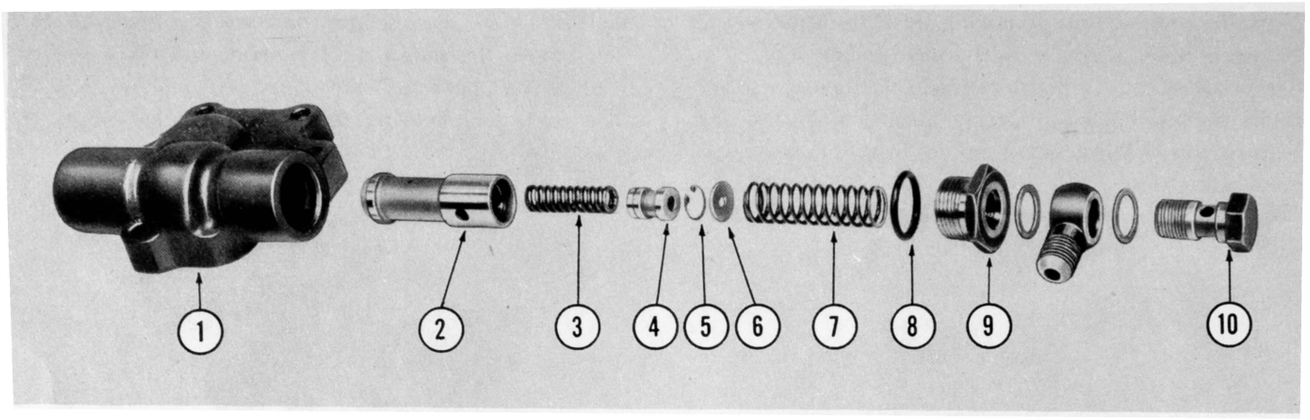
The pump shaft oil seal is located in the pump body and is removed using combination pump shaft seal and power cylinder seal puller J-5503. Lubricate the lip of the new seal with Nash Lubriplate and press the seal into the pump body with the lip toward the rotors.



1. Pump Shaft Bearing
2. Pump Shaft
3. Pump Shaft Seal
4. "O" Ring Gasket
5. Rotors
6. Rotor Lock
7. Gasket

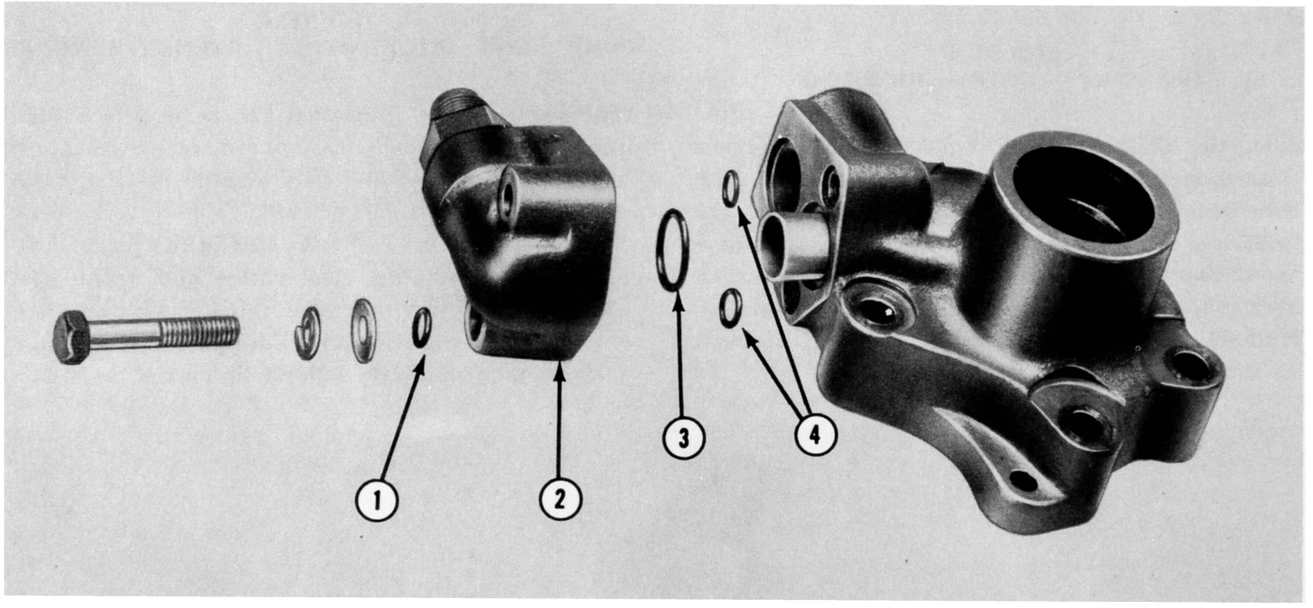
FIGURE 7
ASSEMBLY SEQUENCE OF PUMP BODY, COVER, SHAFT, AND ROTORS "AMBASSADOR" SERIES SHOWN

FRONT SUSPENSION AND STEERING GEAR SECTION ("AMBASSADOR")



1. Pump Cover
2. Flow Control Valve
3. Relief Valve Spring
4. Relief Valve
5. Snap Ring
6. Orifice Plate
7. Flow Valve Spring
8. "O" Ring
9. Valve Cap Adapter
10. Pump Outlet Fitting

FIGURE 8
OIL FLOW CONTROL AND RELIEF VALVE ASSEMBLY SEQUENCE "AMBASSADOR" SERIES SHOWN



1. Attaching Bolt "O" Ring
2. Adapter
3. Inlet Sleeve "O" Ring
4. Attaching Bolt "O" Ring

FIGURE 9
OIL PUMP ADAPTER ASSEMBLY SEQUENCE "AMBASSADOR" SERIES SHOWN

Seal Installer J-5111 is used to press the seal into the housing until it is solidly in place.

NOTE: The seal should not be collapsed or distorted when pressed into the body.

The oil flow control and pressure relief valves are located in the pump cover. They are precision machined and select fitted at time of assembly.

Unscrew the valve cap adapter; this will be under spring tension. Then remove the flow control valve spring and the metal orifice plate.

The flow control valve containing the pressure relief valve may now be removed from the cover.

Remove the snap ring from the end of the flow control valve using pliers J-5103 and remove the pressure relief valve and spring.

Clean and inspect the valves for freedom in the bores; remove all burrs with crocus cloth.

Clean and inspect the pump body and cover shaft bushings, the rotor pocket bushing in the body, and rotor bearing faces for excessive wear or scoring. If replacement of any of these parts is required, install either a new body or new cover depending on the location of the worn parts.

All parts are to be thoroughly clean.

NOTE: Do not wipe parts with a cloth.

Prelubricate all parts as they are assembled.

Install the oil seal in the pump body; then install the shaft and bearing assembly and the snap ring.

Place the rotor key in the recess of the shaft and install the rotors noting their position. Install the large rubber gasket in the recess around the rotor pocket bushing and the "O" ring in the recess of the pump inlet port. Always use new gaskets and "O" rings — *NEVER* use gasket cements or sealers.

Assemble the cover on the body; it is located by dowels. Install and tighten the bolts 30 to 35 ft. lbs. torque.

Install the pressure relief valve spring in the flow control valve. The relief valve is installed with the smooth end toward the outside. Hold the valve against the spring tension and reinstall the snap ring. Place the orifice plate in the recess of the valve above the snap ring.

Carefully install the valve assembly in the pump cover, the flow control valve spring, and then the valve cap adapter with a new "O" ring.

Prior to installing the pump on the car, rotate the pump shaft at least twelve revolutions by hand to insure proper clearances, detect foreign particles that may lodge between the rotors, and to insure initial lubrication.

STEERING LINKAGE

The steering linkage is installed similar to the standard linkage. However, an anti-roll bracket located on the idler arm is used to eliminate the rolling action which is normally present on ball and socket types of linkage (Fig. 10).

The power cylinder during operation would tend to roll the linkage thus necessitating the anti-roll bracket. The ball joints of the steering linkage cross tube are adjustable from the right hand end of the tube. Only one adjusting plug is used to accomplish adjustment as the Pitman Arm socket joint is part of the control valve (Fig. 11).

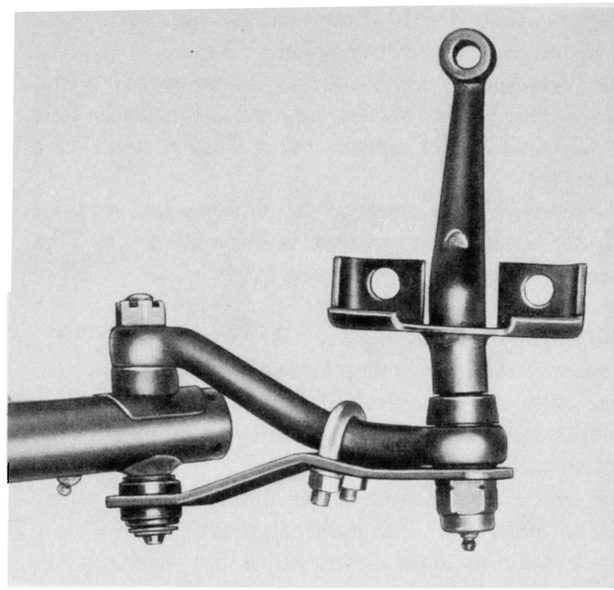


FIGURE 10
IDLER ARM ANTI-ROLL BRACKET

Oil Reservoir

The oil reservoir is attached to the upper right hand side of the engine.

The reservoir cap is clamped to the reservoir and a pressure vent is located in the cap.

A replaceable element type filter is located inside on the stand pipe. A relief valve, which appears to be a spring loaded retaining washer for the element, is used to prevent rupturing the filter when the oil is cold and the viscosity high.

When servicing the system, the fluid level should be to the "F" mark on the indicator.

Refill with Hydra-Matic fluid only.

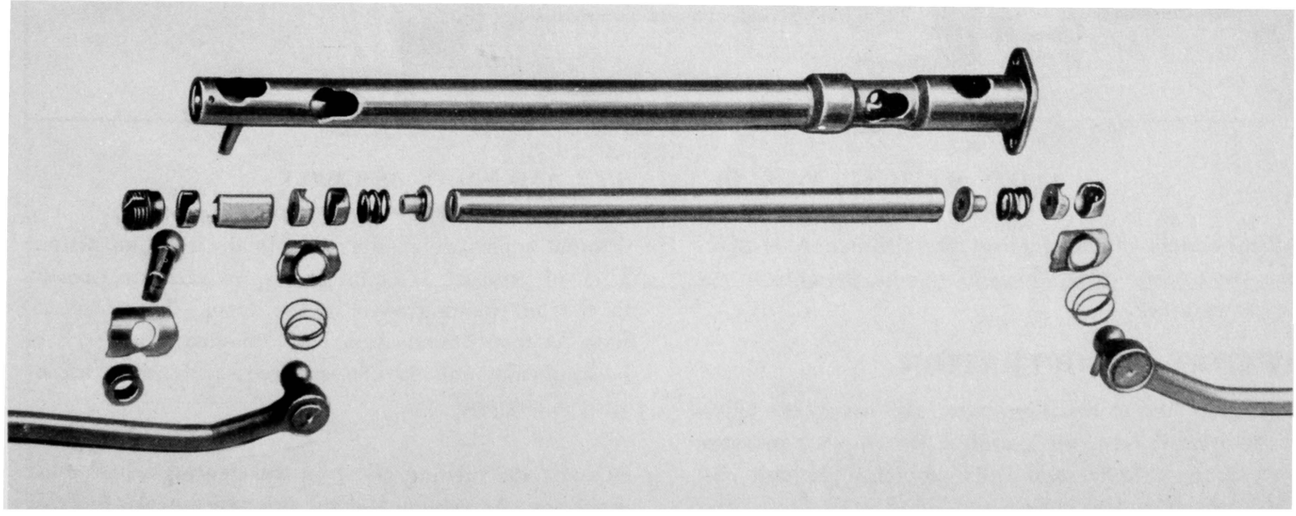


FIGURE 11
ASSEMBLY SEQUENCE POWER STEERING LINKAGE

FRONT SUSPENSION AND STEERING GEAR SECTION ("STATESMAN")

POWER STEERING

"Statesman" Series

The power steering is of the linkage type similar only in operation to the "Ambassador" Series.

The "Statesman" power steering system consists of an oil reservoir, engine driven pump, oil flow control valve, oil pressure relief valve, and cylinder and valve assembly.

The reservoir is mounted on the oil pump and contains a filter element to prevent the circulation of dirt through the system. The system is vented and filled at the reservoir.

The oil pump is an engine, belt driven, positive displacement rotor type pump mounted on the upper right hand side of the engine. It is designed for the high pressure and volume output required to perform steering operations under all conditions.

The relief valve located in the pump cover is pre-set 550 to 800 P.S.I. This valve prevents excessive pressure to build up in the system which may damage parts.

The flow control valve also located in the pump cover controls the maximum volume output of the pump to prevent hydraulic noise and overheating of the oil.

The power steering control valve, power cylinder, and drag link are combined into one assembly called the cylinder and valve assembly. This assembly is connected to the Pitman Arm on the left side and the piston rod of the assembly is anchored on a body side sill bracket on the right side.

THEORY OF OPERATION

Oil is supplied to the pump from the reservoir. Oil is then directed from the pump to the inlet or pressure port of the cylinder and valve assembly through passages to the control valve.

The control valve consists of a sleeve type housing containing the necessary passages and ports. Located in the precision bore of the housing is a movable valve called a valve spool, two reaction pistons, and a stud ball follower. Lands and grooves on the valve spool indexing with the ports in the housing control the direction of oil flow. A stud attached to the Pitman Arm extends through the control valve housing and can move laterally in either direction (Fig. 12).

The valve spool is normally centered by oil pressure on the reaction piston as well as spring pressure. When the valve spool is in the centered position, it directs oil pressure to both sides of the power cylinder. The oil return ports are also partially open so there is relatively low pressure in the system. This is an open center system in which the oil pressure is variable depending upon the amount of effort that is required to turn the wheels (Fig. 13).

LEFT TURN OPERATION

When a left turn is made, the movement of the Pitman Arm stud shifts the valve spool to the right. The valve spool opens the pressure port and closes the return port to the right side of the power cylinder. The return port is opened and the pressure port is closed to the other side of the power cylinder. The oil pressure then moves the cylinder and valve assembly providing power assistance. Displaced oil from the power cylinder is returned to the reservoir through the right groove of the valve spool.

Oil pressure is also directed from the left groove

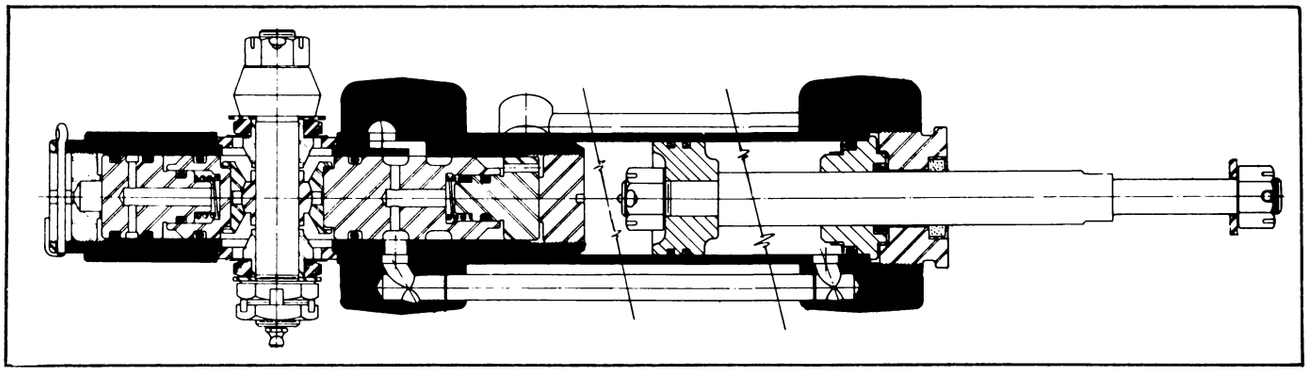


FIGURE 12
CROSS SECTIONAL VIEW OF CYLINDER AND VALVE ASSEMBLY

All movement of the steering gear Pitman Arm operates the control valve which directs oil pressure to the power cylinder.

through a passage in the spool to the reaction piston. This oil pressure is equal to the oil pressure present in the left hand groove in the spool. Therefore, as soon as the Pitman Arm stops moving, the spool is hydraulically and spring centered, and power assistance is stopped.

Actually the turning effort on the steering wheel must overcome the spring and oil pressure on the ends of the spool before the spool can be moved which results in a sense of "feel" for the driver (Fig. 14).

FRONT SUSPENSION AND STEERING GEAR SECTION ("STATESMAN")

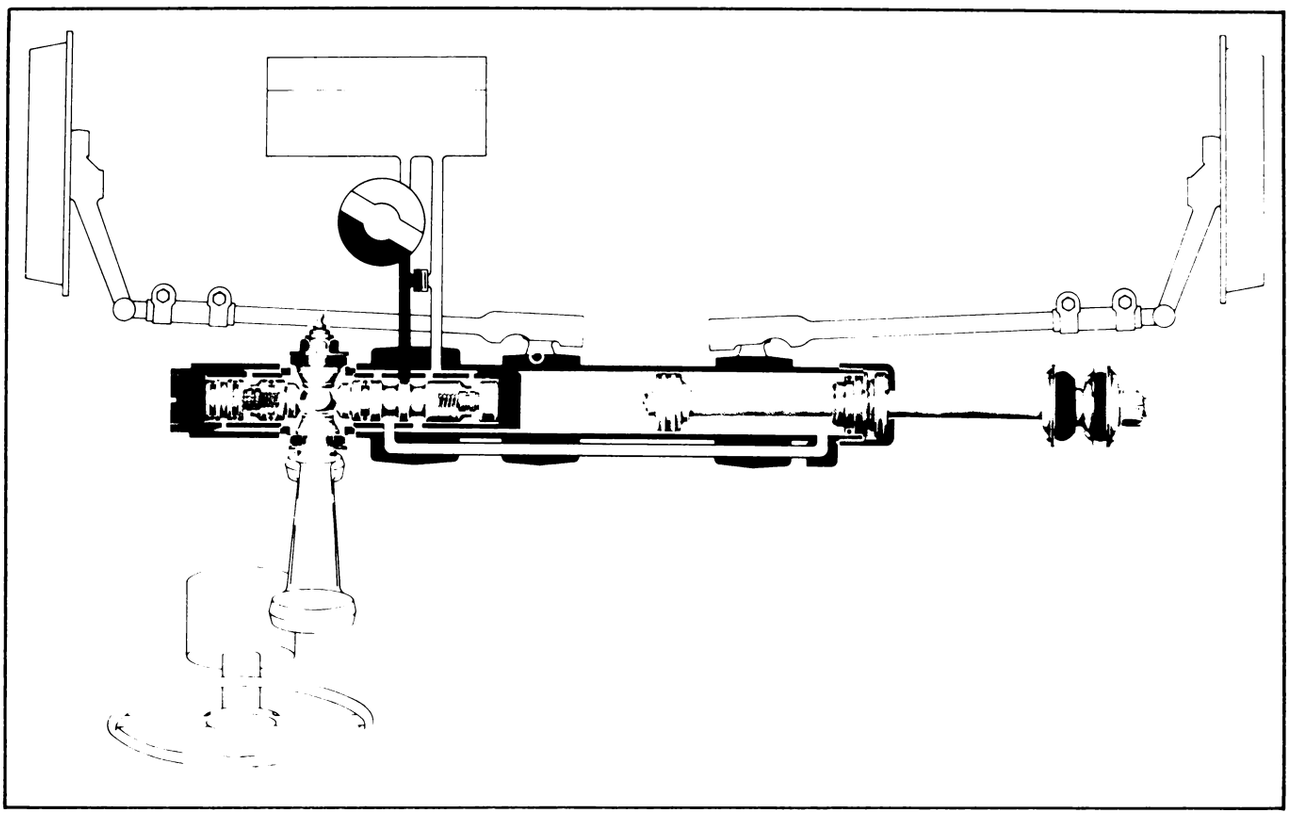


FIGURE 13
SCHEMATIC OIL CIRCUIT — CENTERED POSITION

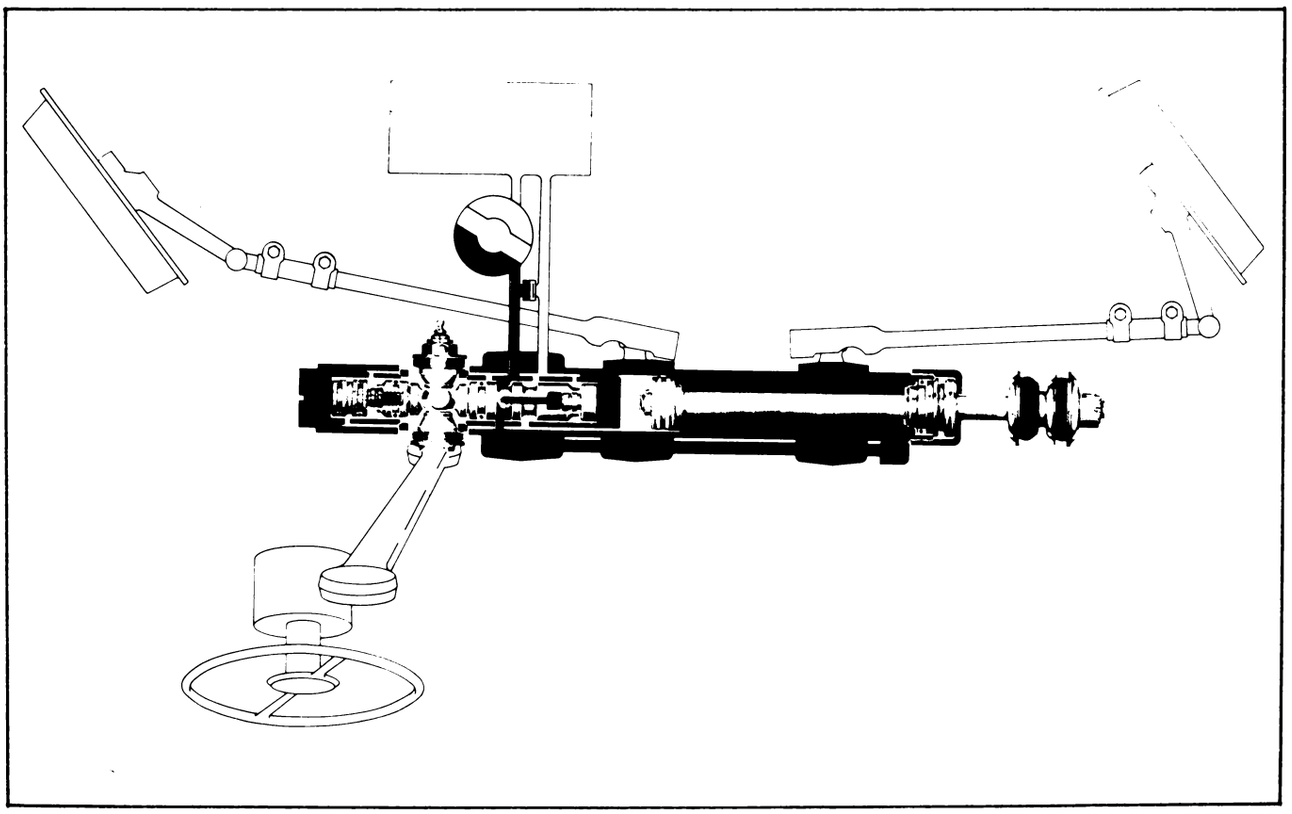


FIGURE 14
SCHEMATIC OIL CIRCUIT — LEFT TURN

FRONT SUSPENSION AND STEERING GEAR SECTION ("STATESMAN")

RIGHT TURN OPERATION

The right turn operation is accomplished in the same manner as the left turn with the exception that the valve spool is moved to the left (Fig. 15).

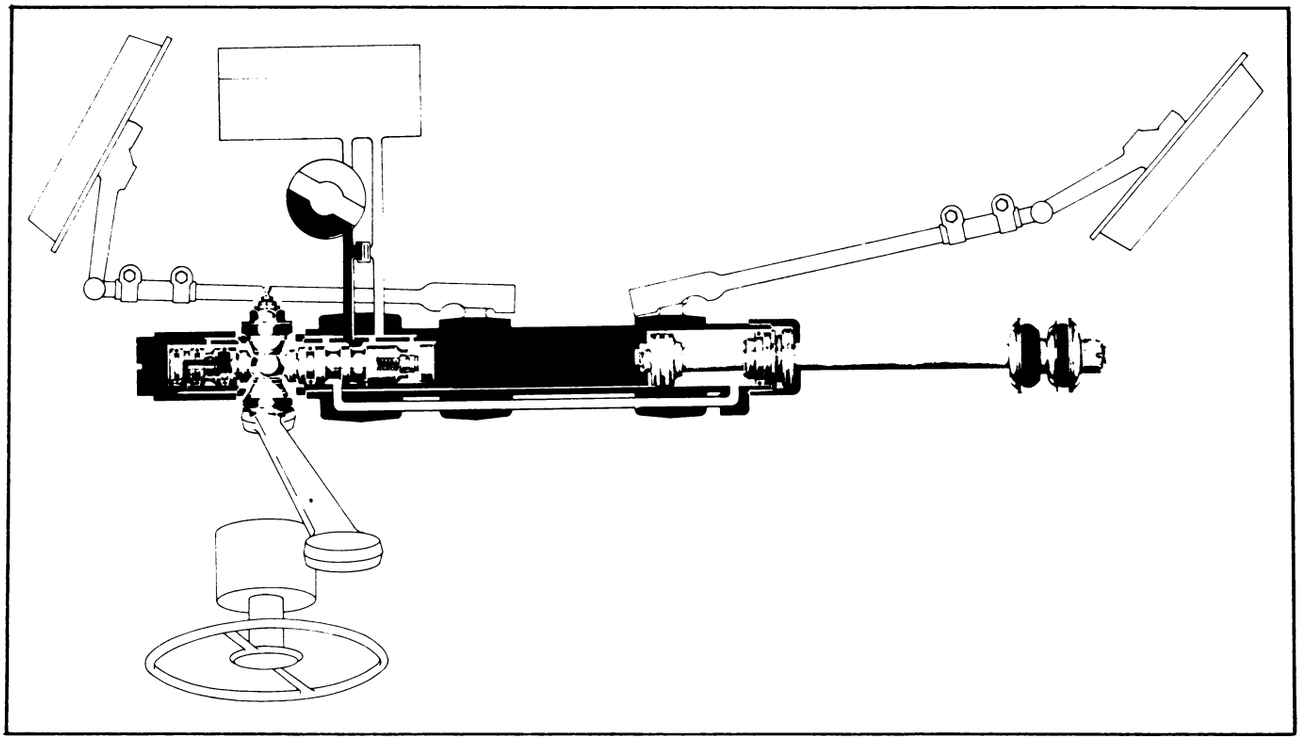


FIGURE 15
SCHEMATIC OIL CIRCUIT — RIGHT TURN

A bump or rut deflects the front wheel slightly and moves the steering linkage accordingly. If the steering wheel is being held, the Pitman Arm remains stationary. Therefore, the cylinder and valve assembly is moved but the valve spool is held stationary. This results in valve ports being opened to supply oil pressure to the cylinder which corrects the movement of the front wheel without disturbing the steering wheel.

For Example: A rut deflects the front wheels to the right. This movement of the linkage is to the left so the cylinder and valve assembly is to the left. Since the valve spool has not moved, the ports for a left turn are opened and the wheel deflection is corrected (Fig. 14).

MANUAL STEERING

When the pump is not supplying pressure, steering is performed entirely by manual effort. Turning the steering wheel moves the Pitman Arm in the usual manner. The valve spool is moved and valve ports opened to permit the oil to be displaced by the piston movement. Steering without power assistance requires slightly more effort than with the conventional manual steering system due to lower steering gear ratio.

POWER STEERING PUMP

The power steering pump is of the same type as used on the "Ambassador" Series. However, the pump reservoir is mounted on the pump and internally connected to the pump inlet. The oil pressure relief valve is set for 550 to 800 P.S.I.

The pump is driven by a "V" belt on the rear pulley of the double pulley fan assembly. Therefore, fan belt tension is important to prevent slippage due to the additional load required to drive the power steering pump.

CYLINDER AND VALVE ASSEMBLY

Removal

Disconnect the oil hoses, the piston rod from the side sill bracket, and the Pitman Arm from the stud.

NOTE: Do not use a wedging type tool for removing the Pitman Arm or the cylinder and valve assembly may be damaged.

The stud complete with lock nuts, washers, shoes, and rubber cushions should be removed to prevent damage to the parts.

Loosen the two tie rod ball seat adjusting plugs and disconnect the tie rods.

The cylinder and valve assembly may now be removed for bench overhaul.

Disassembling the Valve Assembly

Punch mark the exposed end of the plug to insure

accurate reassembly; then remove the plug from the valve end of the unit.

Tap the valve end of the assembly on a block of wood to remove the valve parts. Do not pry on any of the units or they may be nicked or scratched.

The inner plug should never be removed because it is factory installed and staked in position. Changing the position of this plug will disturb the neutral centered position.

Valve parts will be supplied only with the cylinder and valve assembly as the total length of the components must be held to close tolerances to maintain correct valve spool port alignment.

New "O" rings should be installed whenever the valve is disassembled.

Assembling the Valve

Assemble the inner reaction piston and spring in the end of the valve spool, and install the units in the valve housing so the reaction piston contacts the inner plug. Install a ball seat on the valve spool.

Assemble the outer reaction piston and spring in the stud ball follower. Place the stud ball on the end of the valve spool so the stud hole is aligned with the stud openings in the housing.

Install a ball seat on the end of the follower. The reaction piston and follower is installed in the valve bore and will hold the stud ball in position.

Install the plug in the valve and tighten to the original position. (This is usually with the punch marks aligned and the plug flush with the end of the valve.) Do not install the cotter pin at this time because the final centering adjustment should be accomplished on a road test.

Disassembling the Power Cylinder

Remove the plug from the end of the cylinder and carefully pull the piston and piston rod from the cylinder.

The piston rod guide will be removed with the piston and rod assembly.

A punch may be used to remove the felt dirt seal located in the plug.

Install a new seal flush with the surface of the plug using Tool J-5619 Seal Installer which will not damage

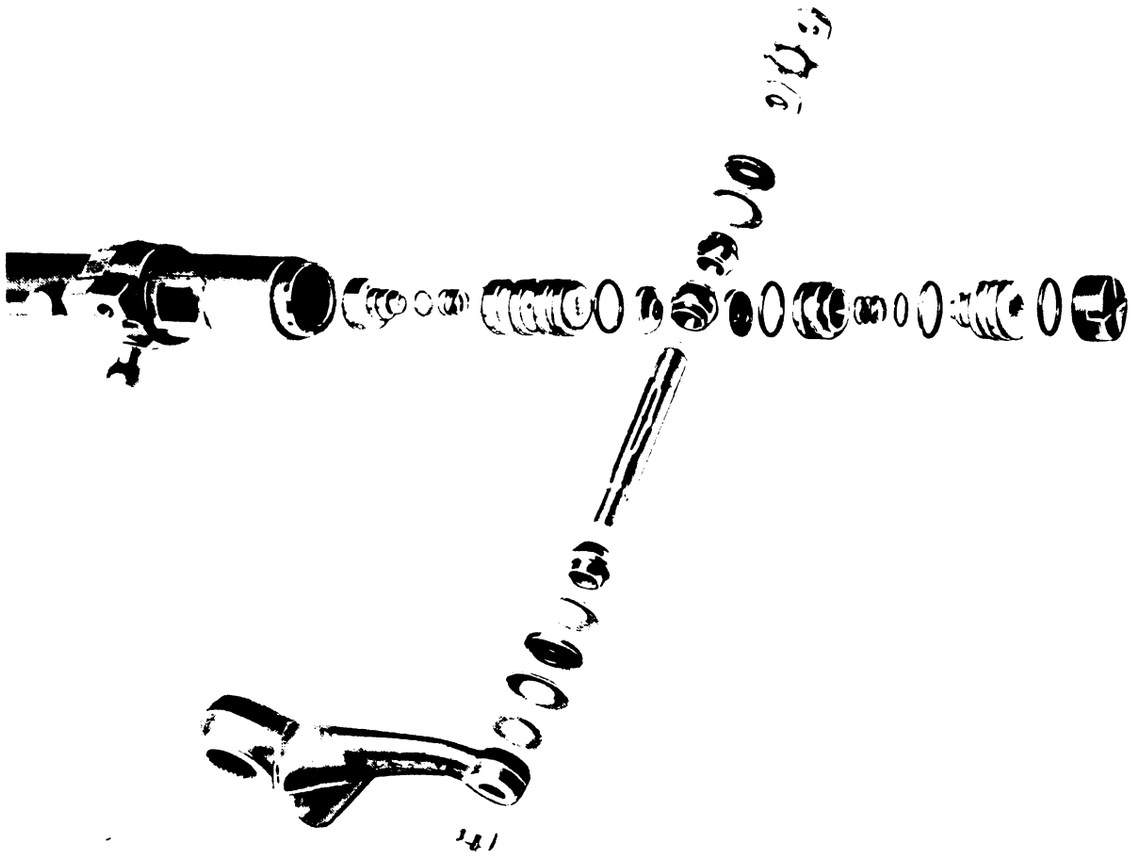


FIGURE 16
CROSS SECTION VIEW OF VALVE ASSEMBLY

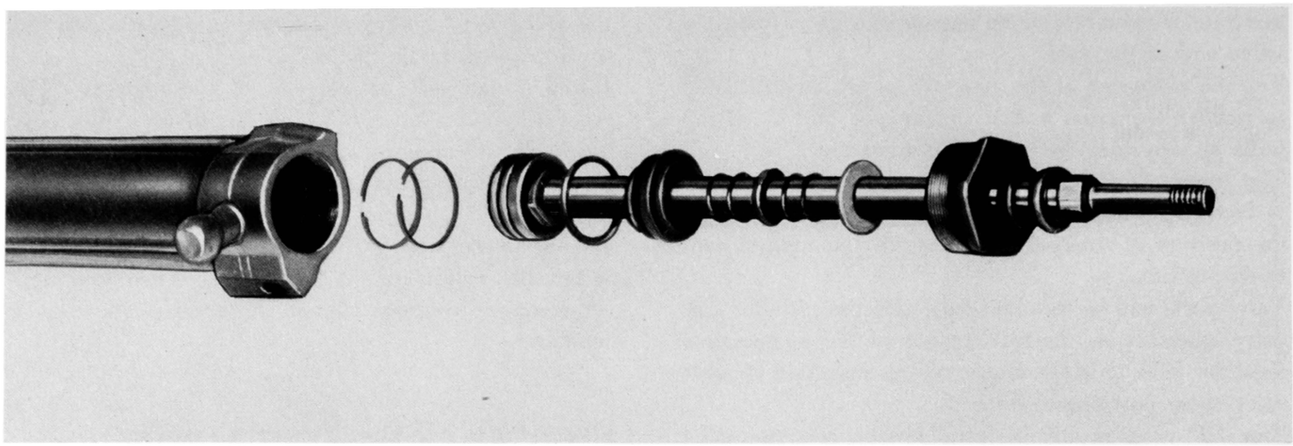


FIGURE 17
CROSS SECTION OF CYLINDER

the raised inner diameter of the seal.

Two seals are installed in the piston rod guide. One is an "O" ring installed on the inner end and the other is a "T" shaped seal the shape of which is maintained by fibre washers.

This seal is located in the outer end of the guide under a removable metal retainer.

The piston and rod will be serviced as an assembly as it is important that the piston and rod concentricity be maintained.

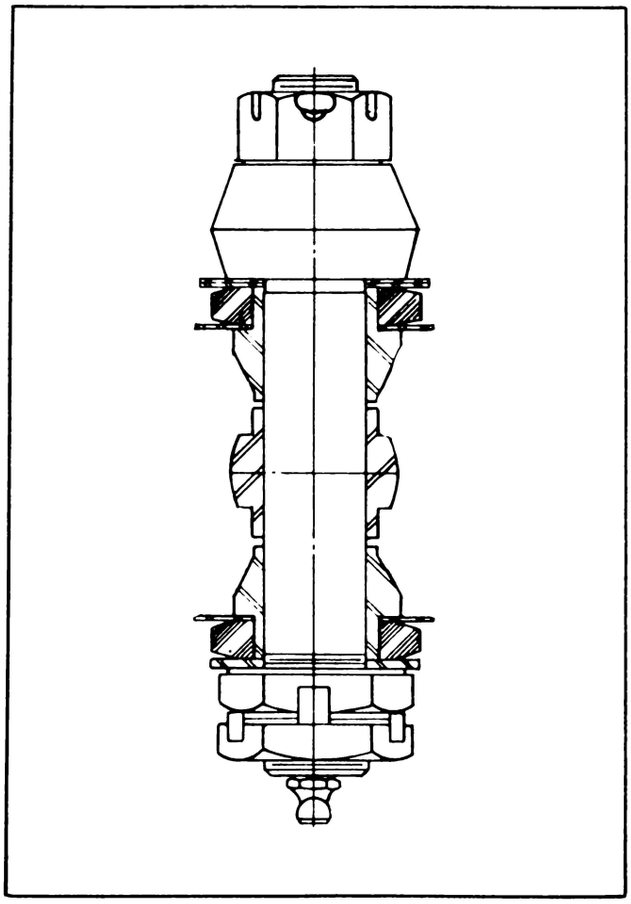


FIGURE 18
CROSS SECTION OF STUD ASSEMBLY

The piston rings should be replaced if there is evidence of wear or leakage.

Reinstalling the Cylinder and Valve Assembly

When reinstalling the cylinder and valve assembly, the Pitman Arm stud and component parts should be reassembled in the valve housing and installed on the Pitman Arm (Fig. 18).

Tighten the inner nut on the stud until there is sufficient tension on the rubber cushions to prevent rattles and grease leakage and still permit free movement of the stud. Over-tightening the stud will cause poor recovery from turns and binding when steering.

When the stud has been correctly adjusted, the outer lock nut should be tightened and the lock washer tabs bent holding both nuts.

After the cylinder and valve assembly have been reinstalled in the car, the lines must be bled by performing several complete power operated turns and refilling the reservoir. The car must be road tested for final centering adjustment as follows:

The screw plug in the valve housing may be turned in or out $\frac{1}{16}$ of a turn at time, road testing after each adjustment. The plug should not be adjusted more than $\frac{1}{2}$ turn in either direction. If adjustment cannot be made with a $\frac{1}{2}$ turn, the cylinder and valve should be replaced.

Turn the plug "IN" if:

Left turn is too hard
Right turn is too easy
Poor recovery from right turns,
but good recovery from left turns
Car wanders to the right

Turn the plug "OUT" if:

Right turn is too hard
Left turn is too easy
Poor recovery from left turns;
good recovery from right turns
Car wanders to the left

FRONT SUSPENSION AND STEERING GEAR SECTION ("AMBASSADOR" AND "STATESMAN")

OIL PRESSURE CHECK "AMBASSADOR" AND "STATESMAN" SERIES

Inspect the reservoir for correct fluid level; if low, fill to the proper level with Hydra-Matic Transmission fluid type "A".

Inspect all hoses and connections for evidence of external leakage.

Install oil pressure gauge — J-5548 in the main oil line at the control valve assembly. Start the engine and allow the oil to circulate for several minutes to warm the oil.

On the "Ambassador" Series, the pressure should be approximately 450 to 550 P.S.I. when turning the front wheels on dry concrete.

Turn the wheels against the curbing or other obstacle and hold tension on the wheel. Note the oil pressure; it should be 700 to 900 P.S.I. on the "Ambassador" Series and 550 to 800 P.S.I. on the "Statesman" Series. Turn the wheel in the opposite direction and note the reading. If there is a variation between the left and right turns, internal leakage is evident. If the pressure is low, stop the engine and disconnect the gauge from the cylinder and valve assembly and cap the pressure line.

Restart the engine and note the reading; if it is 700 to 900 P.S.I. "Ambassador" Series or 550 to 800 P.S.I. "Statesman" Series, the pump is operating properly. If the pressure is low, the pump belt or fan belt may be slipping. With the belt tension correct and there is low pressure, the trouble exists in the pump.

NOTE: Do not run the last check for a period longer than is necessary to obtain a steady pressure reading.

On the "Ambassador" Series, disconnect the control valve to power cylinder lines and plug the ports in the control valve. With the engine idling, steer the car in both directions observing the pressure. The oil pressure should be 700 to 900 P.S.I. Low pressure in either turn indicates internal valve leakage. If the pressure is correct, then the oil leakage exists in the power cylinder.

POWER STEERING DIAGNOSIS GUIDE

CONDITION	CAUSE	CORRECTION
Hard Steering or Lack of Sufficient Power Assistance or Poor Recovery from Turns	Bent Piston Rod	Replace Pistod Rod
	Low Oil Pump Pressure	Inspect Pump Operation and Correct
	Insufficient Oil Flow in System	Inspect Pump Flow Control Valve; Inspect Oil Hoses for Restriction
	Internal Leak in Control Valve	Disassemble Control Valve, Inspect, and Correct
	Internal Leak in Cylinder	Disassemble Cylinder, Inspect, and Correct
	Front Wheel Alignment Incorrect	Align Front Wheels
	Steering Knuckle Pins Binding	Inspect for Worn or Tight Trunnions
	Steering Linkage Tight	Adjust Steering Linkage Ball Joints
	Steering Gear Adjustment too Tight	Readjust Steering Gear
	Binding Valve Spool in Control Valve	Disassemble Valve and Inspect for Nicks or Burrs Both Series
		*Adjust Spool Bolt Nut Properly
		†Adjust Valve of Cylinder and Valve Assembly

FRONT SUSPENSION AND STEERING GEAR SECTION ("AMBASSADOR" AND "STATESMAN")

CONDITION	CAUSE	CORRECTION
Hard Steering or Lack of Sufficient Power Assistance or Poor Recovery from Turns—(Cont'd)	Pitman Arm Stud Binding	*Adjust Ball Stud Seats to Permit Ball Stud to Turn at 10 to 25 Inch Pounds Break-Away Torque
		†Adjust Pitman Arm Stud for Correct Rubber Cushion Tension
	Tight or Binding Sliding Tube	*Inspect Tube for Dirt or Damaged Parts
Lack of Power Assistance in One Direction	Steering Gear Binding	Adjust Steering
	Bent Piston Rod	Replace Piston Rod
	Loose Valve Spool Bolt Nut	*Adjust Valve Spool Bolt Nut
	Valve Spool Spacer Sleeve Too Long or Short	*Inspect Valve Spool Spacer Sleeve Length Should be $41/64$"
	Valve in Cylinder and Valve Assembly Incorrectly Adjusted	†Adjust Valve of Cylinder and Valve Assembly
	Incorrect Front Wheel Alignment	Realign Front Wheels
Car Wanders from Straight Ahead Without Force Holding Steering Wheel	Pitman Arm Stud Binding on Cylinder and Valve Assembly	†Adjust Stud Tension Properly
	Valve of Cylinder and Valve Assembly not Adjusted Properly	†Adjust Valve Correctly
Poor Recovery from Turns	Piston Rod Bent	Replace Piston Rod
	Front Wheel Alignment Incorrect	Align Front Wheels
	Valve in Cylinder and Valve Assembly Incorrectly Adjusted or Sticking	†Adjust the Valve of Cylinder and Valve Assembly
Noisy Operation	Pump Pulley Shaft Key Loose	Replace Pump Shaft Key or Replace Pump Shaft and/or Pulley
	Restricted Air Vent in Reservoir Cover	Remove Cover and Clean Vent
	Pump Bearing Worn	Replace Bearing
	Pump Bushings Worn	Replace Pump Cover or Body
	Dirt in Pump	Disassemble Pump and Clean. Flush System
	Pitman Arm Stud (Rattles)	Adjust Pitman Arm Stud or Replace Worn Parts

* Applies to "Ambassador" Series Only

† Applies to "Statesman" Series Only

FRONT SUSPENSION AND STEERING GEAR SECTION ("AMBASSADOR" AND "STATESMAN")

FRONT WHEEL ALIGNMENT SPECIFICATIONS

	"Ambassador"	"Statesman"	"Rambler"
Turning Angle	23° + ½° —0°	23½° + ½° —0°	22½° + ½° —0°
Kingpin Angle	6½°	6½°	8½°
Caster Angle Without Power Steering	0° to ½° ½° Desired	0° to ½° ½° Desired	¾° to 1¼° 1° Desired
Caster Angle With Power Steering	½° to 1° 1° Desired	½° to 1° 1° Desired	———
Camber	¼° Neg. to ¼° Pos. 0° Desired	¼° Neg. to ¼° Pos. 0° Desired	¼° to ¾° Pos. ½° Desired
Toe-in	1/16" to 3/16"	1/16" to 3/16"	⅛" to ¼"

RUNNING GEAR SECTION

FRONT SPRING SPECIFICATIONS

Series	Free Height	Loaded Height	Rate Lbs. Per Inch After Loaded Weight
"Ambassador"	17½" to 18"	8⅝" at 1000# Plus or Minus 25#	115# Plus or Minus 5#
"Statesman"	17 13/16" to 18⅝"	8⅝" at 920# Plus or Minus 25#	100# Plus or Minus 5#
"Rambler"			
100" W.B. Standard and Overdrive	16⅞"	10" at 755# Plus or Minus 20#	110# Plus or Minus 4#
Hydra-Matic	18"	10⅜" at 755# Plus or Minus 20#	110# Plus or Minus 4#
108" W.B. Standard and Overdrive	18"	10⅜" at 810# Plus or Minus 22#	110# Plus or Minus 4#
Hydra-Matic	18⅜"	10⅜" at 845# Plus or Minus 22#	110# Plus or Minus 4#

REAR SPRING SPECIFICATIONS

Series	Free Height	Loaded Height	Rate Lbs. Per Inch After Loaded Weight
"Ambassador" and "Statesman"			
(Light)	17⅞"	10 9/16" at 870# Plus or Minus 25#	125#
(Heavy)	15½"	10 17/32" at 870# Plus or Minus 25#	175# Plus or Minus 5#
"Rambler" 100" W.B.			
(Light—6 Leaf)	7⅞" Plus or Minus ⅛" Center Line of Eyes to Top of Main Leaf	1 5/16" Plus or Minus ⅛" at 650#	100# Plus or Minus 5#
(Heavy—9 Leaf)	6⅝" Plus or Minus ⅛" Center Line of Eyes to Top of Main Leaf	1 5/16" Plus or Minus ⅛" at 760#	145# Plus or Minus 8#
"Rambler" 108" W.B.			
(Light—6 Leaf)	7¾" Plus or Minus ⅛" Center Line of Eyes to Top of Main Leaf	1 5/16" Plus or Minus ⅛" at 670#	100# Plus or Minus 5#
(Heavy—6 Leaf)	6¼" Plus or Minus ⅛" Center Line of Eyes to Top of Main Leaf	1 5/16" Plus or Minus ⅛" at 760#	145# Plus or Minus 7#

BODY SECTION

"AMBASSADOR" AND "STATESMAN" SERIES

A standard finish of new oxford grey metallic will be used on the instrument panel and finish mouldings except the Custom models which will be in a pearl metallic finish of dark grey, blue, and green.

The color of the front door armrest plastic base on Super models will be stone grey.

The rear deck cover hinges have been designed so the deck cover top edge will be closer to the rear window and ahead of the drain trough.

A new type door check for the front and rear doors of the "Ambassador" and "Statesman" Series will serve to hold the door in the open position as well as a stop to limit the travel of the door when it is opened. The redesigned door check link will operate between two steel rollers that are under spring tension. The two steel rollers and springs are encased into a separate unit which is riveted to a bracket on the inside of the door hinge pillar.

"RAMBLER" SERIES

1954 "Rambler" Series Models

108" Wheelbase

5425	Custom	Four Door Trunk Sedan

100" Wheelbase

5421	Custom	Two Door Soft Top Convertible
5424	Custom	Two Door Station Wagon
5427	Custom	Two Door Country Club Sedan
5414	Super	Two Door Suburban
2404		Two Door Deliveryman

The new 108" wheelbase four door trunk sedan will have the same appearance as the Country Club model from the front body pillars forward and from the rear window to the rear of the car. All front and rear body parts are interchangeable with the Country Club models except the larger rear window glass.

The center section of the body has been increased in length to provide openings for the new front and rear doors. This affects the center section of the body floor, side sills, sill panels, and roof assembly which have also been increased in length. The rear quarter side panels and rear fenders have been decreased in length. The door hardware and glass in this new model is similar in design and operation to the "Ambassador" and "Statesman" except that the front door ventilator is a friction type.

The front door check incorporated in the 1953 "Rambler" Series has been improved for smoother operation.

A new friction type door check similar to the 1952 Series has been developed for the rear doors.

The doors may be locked from the inside by push button control, the same as the "Ambassador" and "Statesman" Series.

A door aluminum frame exterior rubber weatherseal will be installed on all four door models.

SERVICE REPAIR AIR DRY ENAMEL

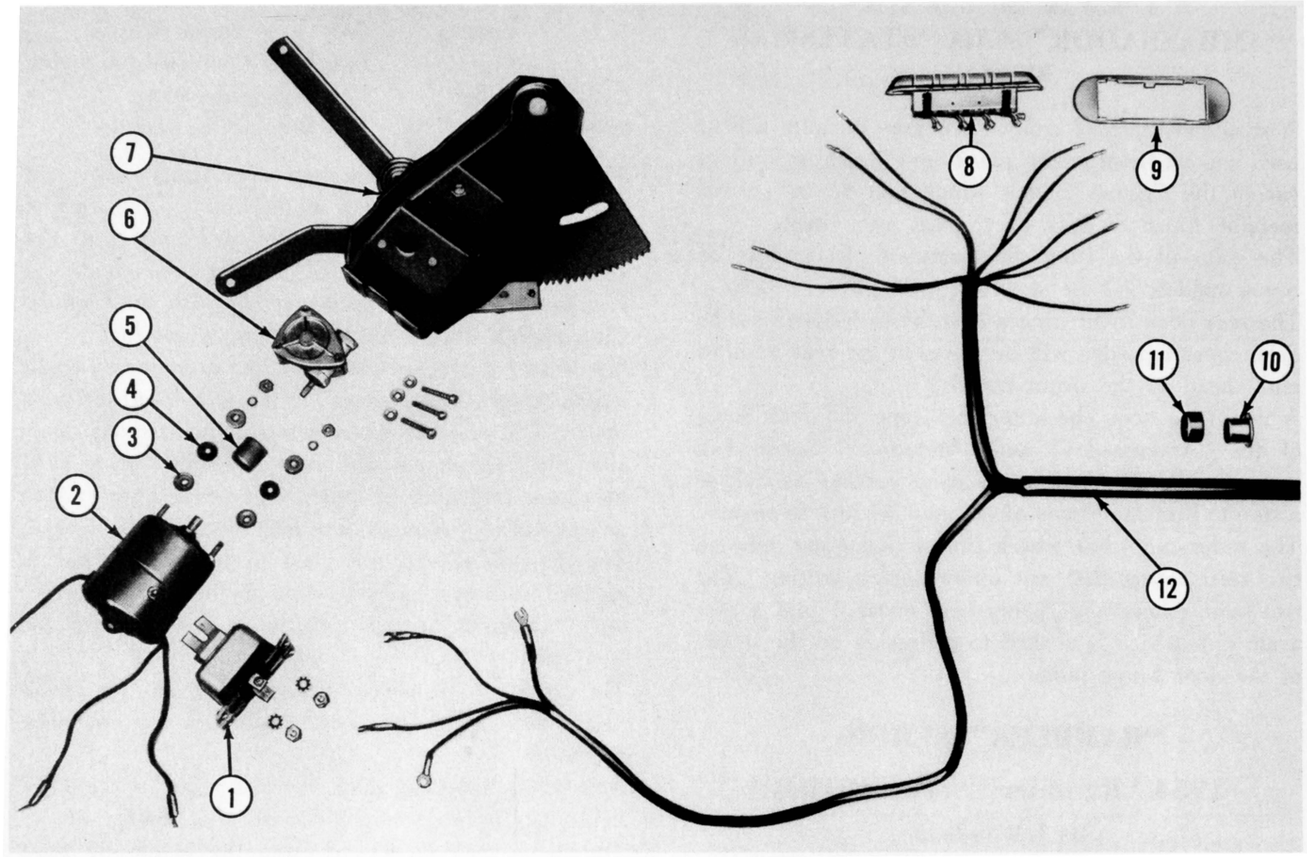
CODE NUMBER	PAINT NAME	DITZLER Ditzco	DUPONT Dulux
1	* Black	DQE-9000	93-005
37	** Willow Green Light	DQE-41160	93-57101
43	*** Anniversary Gold Metallic	DQE-20800	181-10601-H
44	*** Caribbean Blue Medium	DQE-41161	93-57104-H
51	**** Spanish Red	DQE-70420	93-57471-H
52	† Remington Grey Dark Metallic	DQE-31170	181-14111-H
53	† Pinehurst Green Dark	DQE-41526	93-57760
54	† Sherwood Green Medium Metallic	DQE-41527	181-14096-H
55	† Brussels Blue Dark Metallic	DQE-11066	——
56	† Parisian Blue Light	DQE-11104	93-57763
57	† Collegiate Maroon Metallic	DQE-50373	181-14097-H
58	† Malibu Ivory	DQE-80646	93-57765
59	† Mist Grey Light	DQE-41524	93-72210
60	† Croton Green Light	DQE-41493	93-72209-H

* Same as 1949-50-51-52-53 and 1948 Color F
** Same as 1951-52-53
*** Same as 1952-53
**** Same as 1953
† New Colors Added for 1954

INTERIOR COLORS

	Ditzler
Oxford Grey Metallic	DAL-31173
Pearl Dark Grey Metallic	DAL-31172
Pearl Dark Blue Metallic	DAL-11121
Pearl Dark Green Metallic	DAL-41542

NOTE: Wheel Colors Same as Body with Solid Colors; Same as Upper Body Color with Two-Tone Combinations



1. Relay
2. Motor
3. Concave Steel Washer—Motor to Window Regulator
4. Rubber Grommet
5. Coupling
6. Transmission Assembly (Left)
7. Window Regulator (Left Front Door)
8. Master Multiple Switch
9. Master Multiple Switch Mounting Plate
10. Ferrule
11. Ferrule Sleeve
12. Wiring Harness (Left Front Door)

FIGURE 1
COMPONENT PARTS OF ELECTRICALLY-OPERATED WINDOW (LEFT DOOR COUNTRY CLUB MODEL SHOWN)

ELECTRIC WINDOW REGULATOR — "AMBASSADOR" AND "STATESMAN" SERIES

Electrically-operated windows are available as optional equipment on the "Ambassador" and "Statesman" Series.

Individual electric motors connected by a rubber coupling to the window regulator operate each window. The windows are operated by individual switches. A master multiple switch is located on the left front door which, in addition to operating the left front door window, controls the operation of the rest of the windows.

CIRCUIT BREAKERS AND WIRING HARNESSES

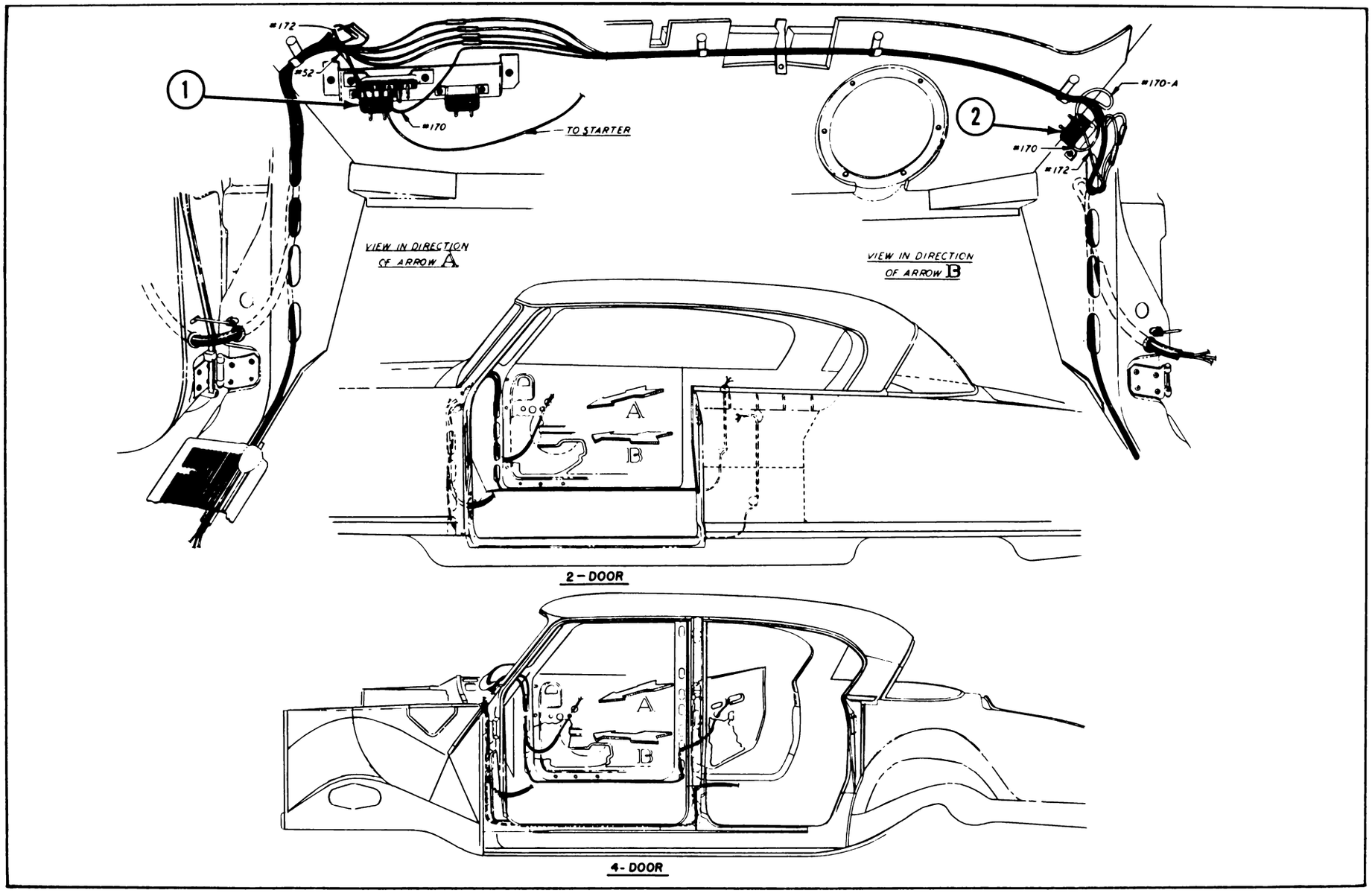
Two thirty ampere circuit breakers are used. One is mounted to the left side of the dash behind the instrument panel and the other to the right front body pillar. The electric energy is supplied from the battery side of the starting motor switch or solenoid to the battery side terminal of the left circuit breaker.

The current used for the operation of the left side windows passes through the left circuit breaker and is taken by individual wiring harnesses to each window. The current for the right side circuit breaker is picked up from the battery side terminal of the left circuit breaker by a jumper wire incorporated in the right front door wiring harness.

The current used for the operation of the right side windows passes through the right circuit breaker and is taken to each window by an individual wiring harness.

A protective rubber tubing is provided on each wire harness at the point where it passes through the body and door pillars. Each door is provided with a Ferrule and Ferrule sleeve to insure smooth operation and prevent possible damage to the wiring harness when the door is opened and closed.

NOTE: The Ferrule and Ferrule sleeve must be obtained and installed in all cases of service door installation. All service doors have knock-out plugs at this location.



1. Left Circuit Breaker 2. Right Circuit Breaker

FIGURE 2
WIRING LAYOUT ELECTRICALLY-OPERATED WINDOWS

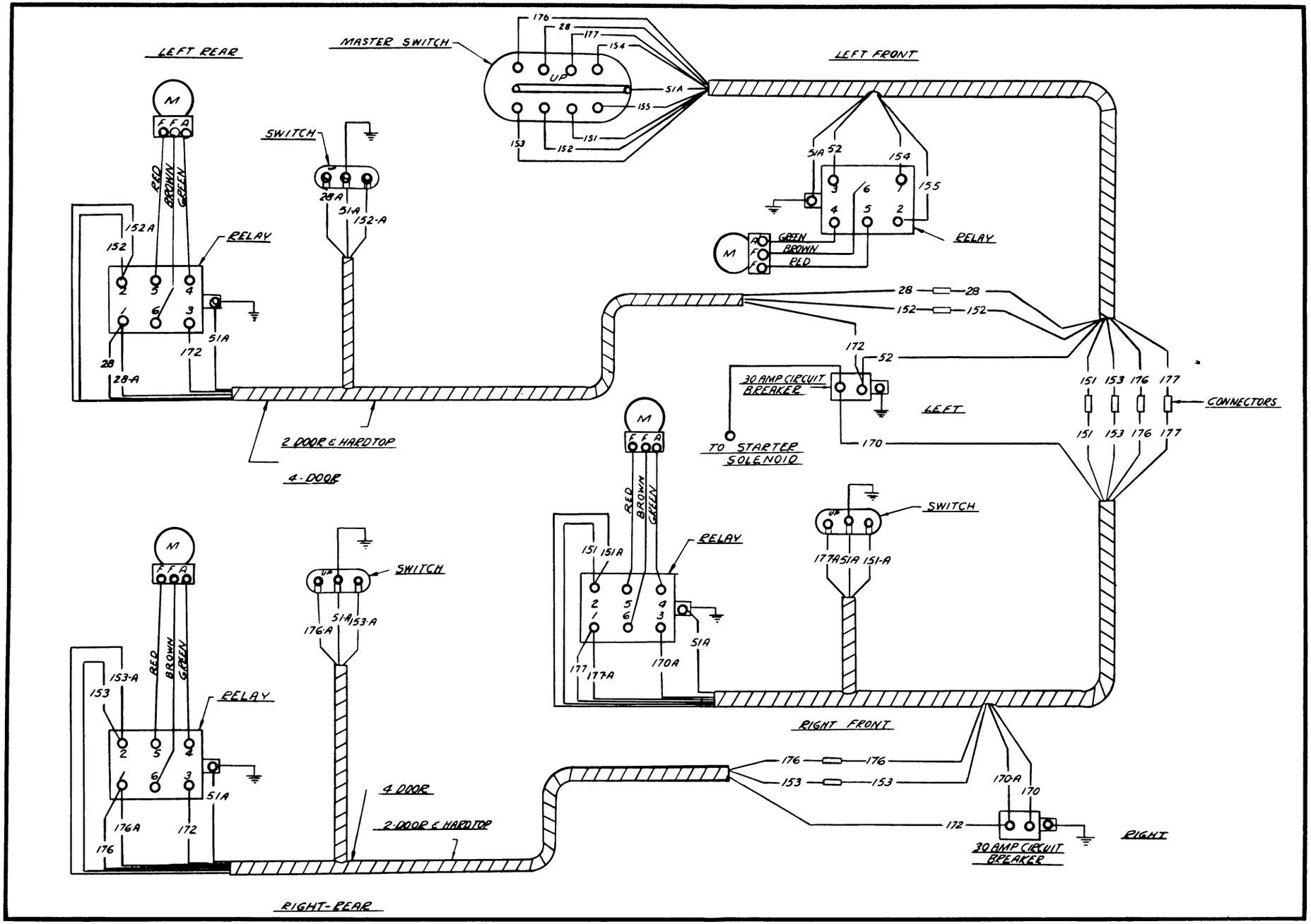


FIGURE 3
WIRING DIAGRAM ELECTRICALLY-OPERATED WINDOWS

WIRING DIAGRAM

Code numbers are used on the wiring diagram to identify each wire for its proper circuit connection (Fig. 3).

CIRCUIT NUMBER	COLOR OF WIRE	USE OF WIRE
28	Green-Red Tr.	Left Rear Relay Terminal #1 to Master Switch
28-A	Green-Red Tr.	Left Rear Relay Terminal #1 to Switch Terminal
51-A	Black-White Tr.	Left Rear Relay Mounting Stud to Ground Terminal of Switch
51-A	Black-White Tr.	Left Front Relay Mounting Stud to Common Ground of Master Switch
51-A	Black-White Tr.	Right Rear Relay Mounting Stud to Ground Terminal of Switch
51-A	Black-White Tr.	Right Front Relay Mounting Stud to Ground Terminal of Switch
52	Blue-Red Tr.	Left Front Relay Terminal #3 to Terminal of Left Circuit Breaker
151	Yellow-Violet Tr.	Right Front Relay Terminal #2 to Master Switch
151-A	Yellow-Violet Tr.	Right Front Relay Terminal #2 to Switch Terminal
152	Yellow-Red Tr.	Left Rear Relay Terminal #2 to Master Switch
152-A	Yellow-Red Tr.	Left Rear Relay Terminal #2 to Switch Terminal
153	Yellow-Black Tr.	Right Rear Relay Terminal #2 to Master Switch
153-A	Yellow-Black Tr.	Right Rear Relay Terminal #2 to Switch Terminal
154	Green-Yellow Tr.	Left Front Relay Terminal #1 to Master Switch
155	Yellow-Green Tr.	Left Front Relay Terminal #2 to Master Switch
170	Yellow	Left Circuit Breaker Terminal to Right Circuit Breaker Terminal
170-A	Red-Blue-X-Tr.	Right Front Relay Terminal #3 to Right Circuit Breaker
172	Red-Blue Tr.	Left Rear Relay Terminal #3 to Left Circuit Breaker
172	Red-Blue Tr.	Right Rear Relay Terminal #3 to Right Circuit Breaker
176	Green-Black Tr.	Right Rear Relay Terminal #1 to Master Switch
176-A	Green-Black Tr.	Right Rear Relay Terminal #1 to Switch Terminal
177	Green-Violet Tr.	Right Front Relay Terminal #1 to Master Switch
177-A	Green-Violet Tr.	Right Front Relay Terminal #1 to Switch Terminal Solenoid Starter to Left Circuit Breaker

WINDOW REGULATOR RELAY

The motor of each window regulator is provided with a relay, which directs the flow of current to the motor, to raise or lower the window as directed by the operation of the control switches (Fig. 4).

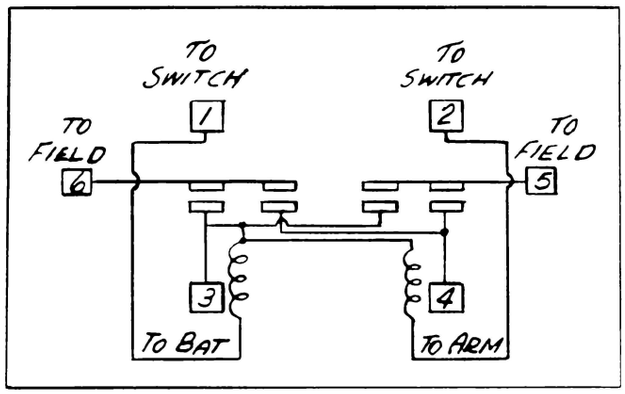
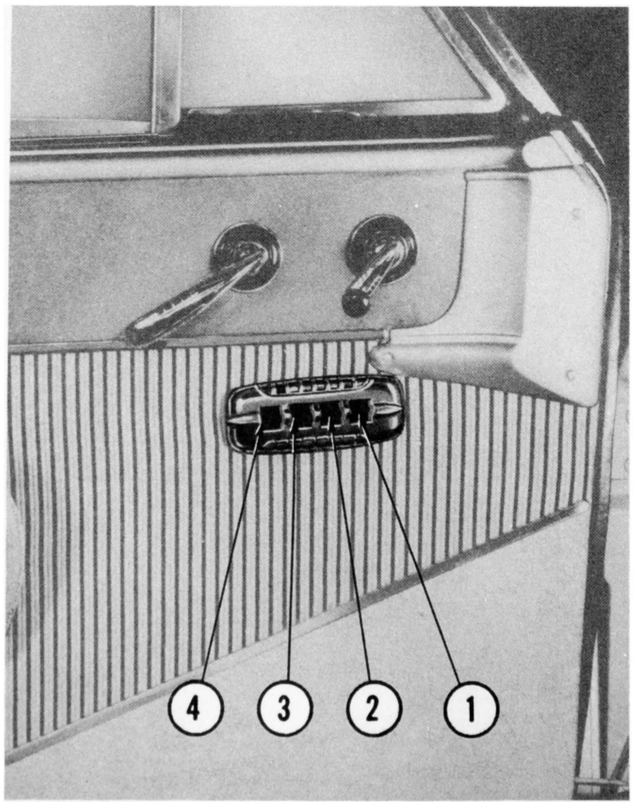


FIGURE 4
WINDOW REGULATOR RELAY CIRCUIT DIAGRAM

CONTROL SWITCHES

The switches are wired in such a manner that to lower the window the switch button is pushed down and to raise, the button is pushed up.



1. Left Front Door Window
2. Right Front Door Window
3. Left Rear Door Window or Rear Quarter Window
4. Right Rear Door Window or Rear Quarter Window

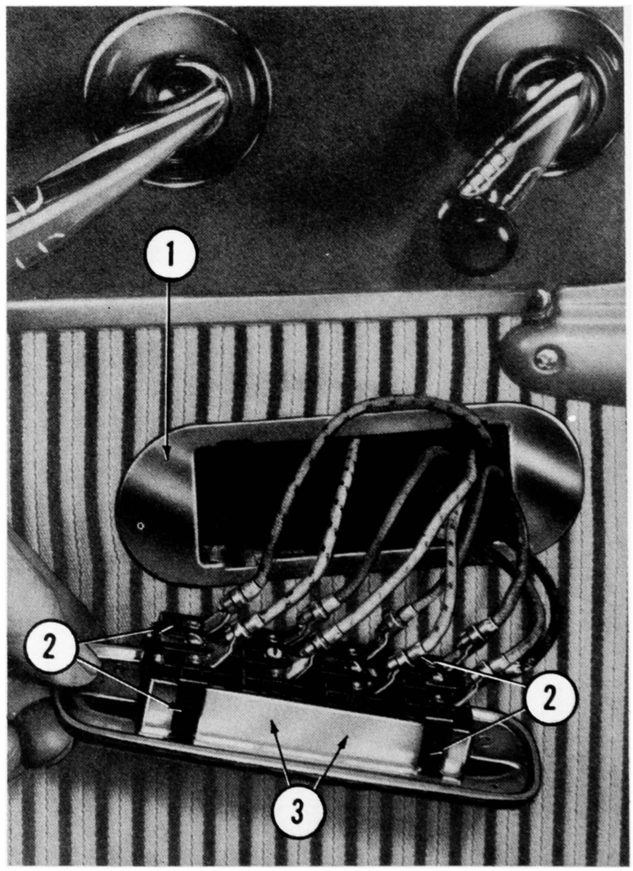
FIGURE 5
MASTER MULTIPLE SWITCH
WINDOW CONTROL DESIGNATION

The windows can be raised, lowered, or stopped and retained to any intermediate position by releasing the switch button when the window has been moved to the desired position.

The master multiple switch has a series of four individual switches (Fig. 5).

Switch Mounting to Trim Panels

All switch assemblies are retained to the trim panel by a mounting plate. These plates have fold-over tabs at each end which fasten them to the switch opening in the trim panel (Fig. 6).



1. Mounting Plate
2. Retaining Springs (Switch Housing to Mounting Plate)
3. Retaining Springs (Switch to Housing)

FIGURE 6
MASTER MULTIPLE SWITCH ASSEMBLY
MOUNTING PLATE AND RETAINING SPRING CLIPS

The master multiple switch assembly is held into the mounting plate by four combination inner and outer retaining springs, one at the top and bottom of each end switch unit. They also serve to hold the end switch units into the switch housing. The inner switch units are retained into the switch housing by one inner retaining spring at the top and bottom of each switch unit.

The individual switch has two combination inner and outer retaining springs, one at the top and bottom of the switch. They hold the switch to the housing and

the housing to the mounting plate in the trim panel. To remove the switch assembly, it is necessary to compress the four retaining springs which hold it to the mounting plate (Fig. 7). The same procedure applies to the individual switches with two retaining clips.

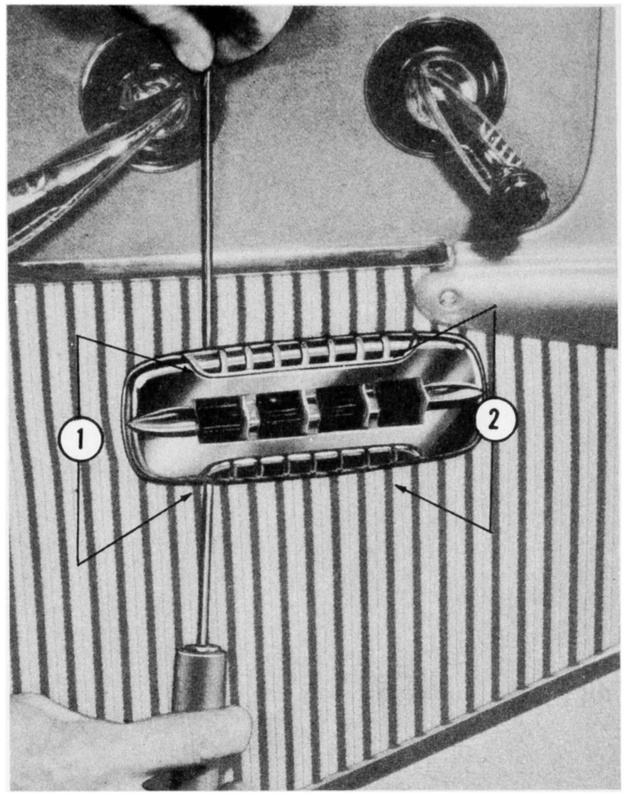
When installing the switch, it is only necessary to insert it into the opening of the mounting plate. *Inspect all terminals to see they will not touch the door metal panel;* then press the switch housing against the mounting plate so the retaining springs snap over the edges of the mounting plate.

Removing Switches from Housing of Master Multiple Switch

To remove the individual switches from the switch housing, the ground bar must be removed from all switches in the assembly. Then it is necessary to release the retaining springs from the housing on each side of the switch.

To release the retaining spring, insert a pointed tool into the spring retaining hole in the housing, compress the spring, and push it outward (1/4") (Fig. 8). Perform the same operation on the other side of the housing. Then lift the switch with the retaining springs from the housing.

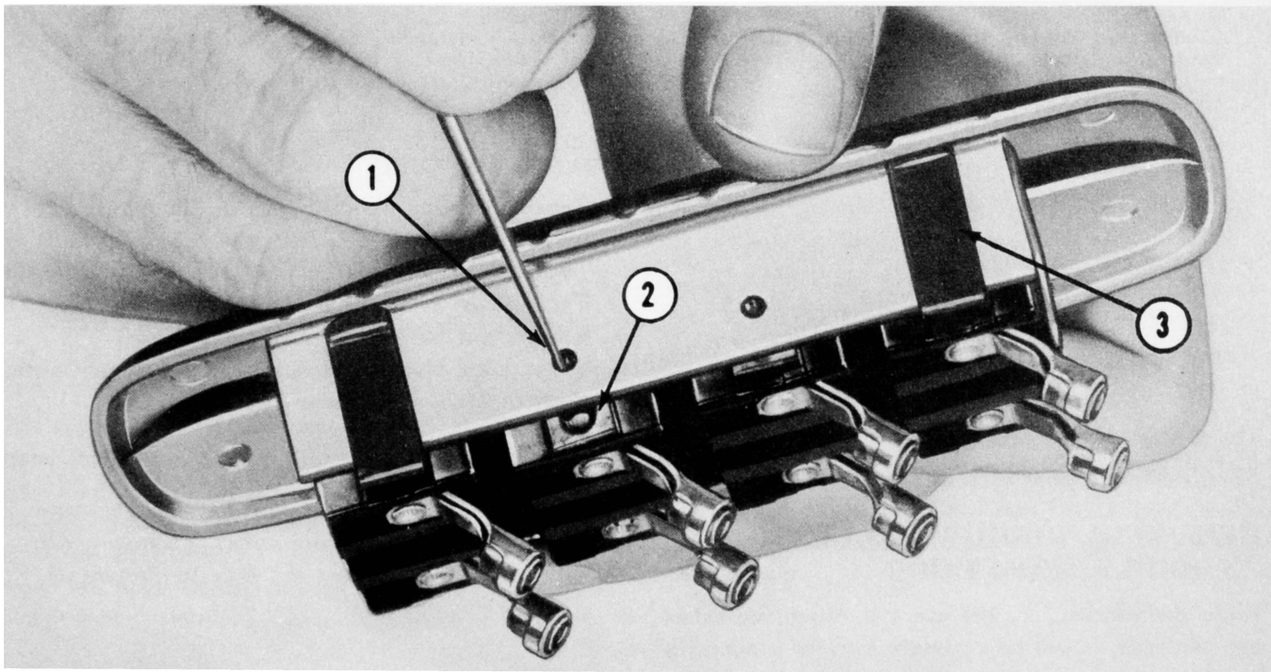
The spring retaining holes in the housing at the end switches are covered by the outer portion of the combination retaining spring. However, they are accessible for removal of the end switch units.



1. Ice Picks Inserted Between Mounting Plate and Switch Housing Compressing Retaining Springs
2. Location of Front Retaining Springs

FIGURE 7

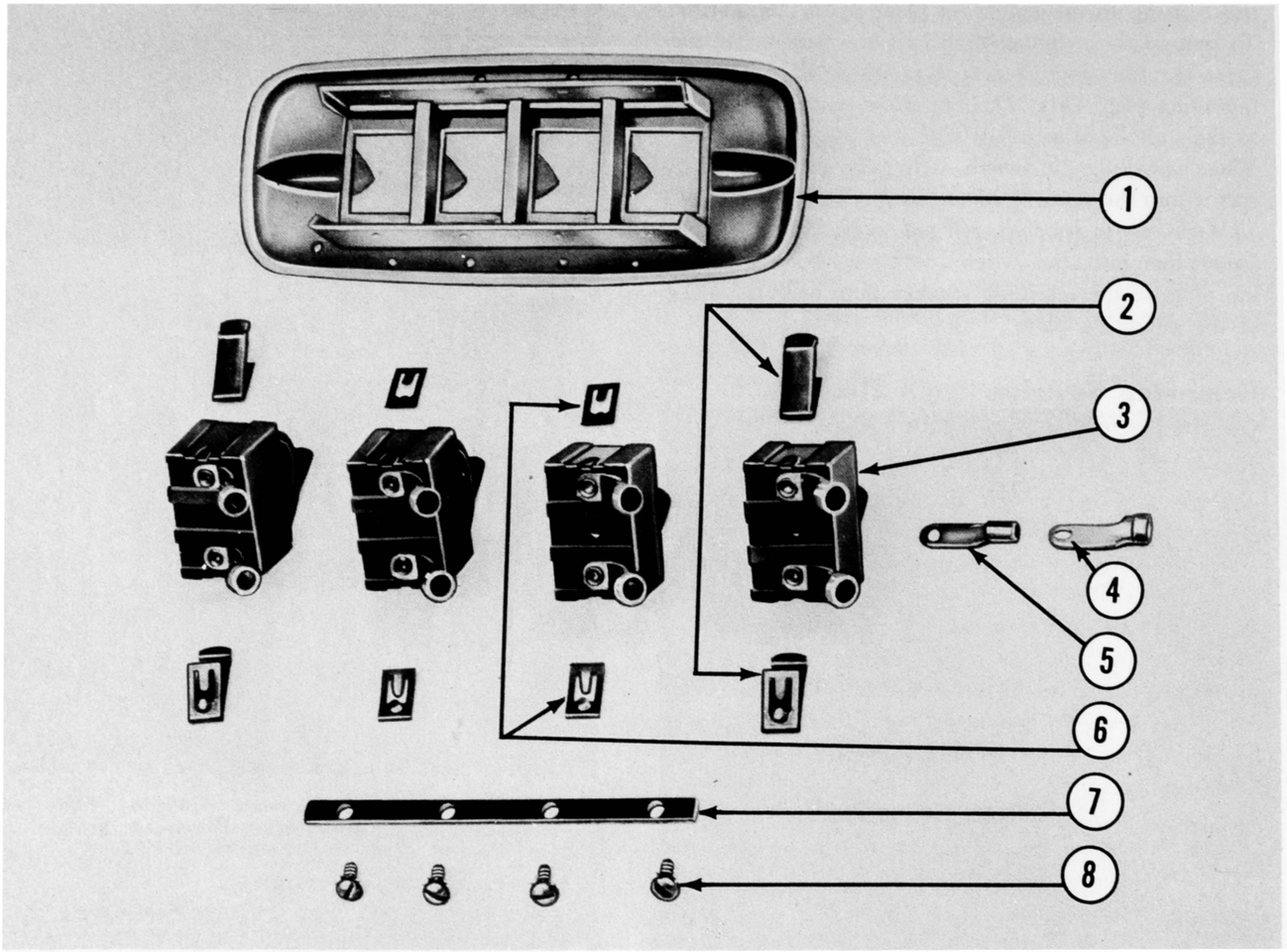
RELEASING REAR TOP AND BOTTOM SWITCH RETAINING SPRINGS FROM MOUNTING PLATE



1. Compressing Switch Retaining Spring from Hole in Housing
2. Retaining Spring Pushed Out After Its Release from the Housing
3. Hole in Housing Under End Retaining Spring for Use to Release End Retaining Springs from Housing

FIGURE 8

REMOVING SWITCHES FROM HOUSING



1. Master Multiple Switch Housing
2. Combination Switch Retaining Spring (Switch to Housing and Housing to Mounting Plate)
3. Switch Unit
4. Terminal Spring Frame
5. Terminal Spring (Copper)
6. Switch Retaining Spring (Switch to Housing)
7. Switch Ground Bar
8. Switch Ground Bar Screw

FIGURE 9
MASTER MULTIPLE SWITCH ASSEMBLY

NOTE: The terminals used on the switch units of the master multiple switch assembly are bent to approximately 45° angle while those used on the individual switch assemblies are straight. Therefore, these switch units are not interchangeable.

The combination retaining springs are interchangeable on both switch assemblies.

REMOVING WINDOW REGULATOR ASSEMBLY FROM DOOR

Raise the window. In the event it cannot be raised automatically, it will be necessary to raise it manually by turning the motor to transmission rubber coupling. This operation can be performed by inserting hands through cut-outs in door panel after trim panel is removed.

Disconnect the battery.

Remove trim panel.

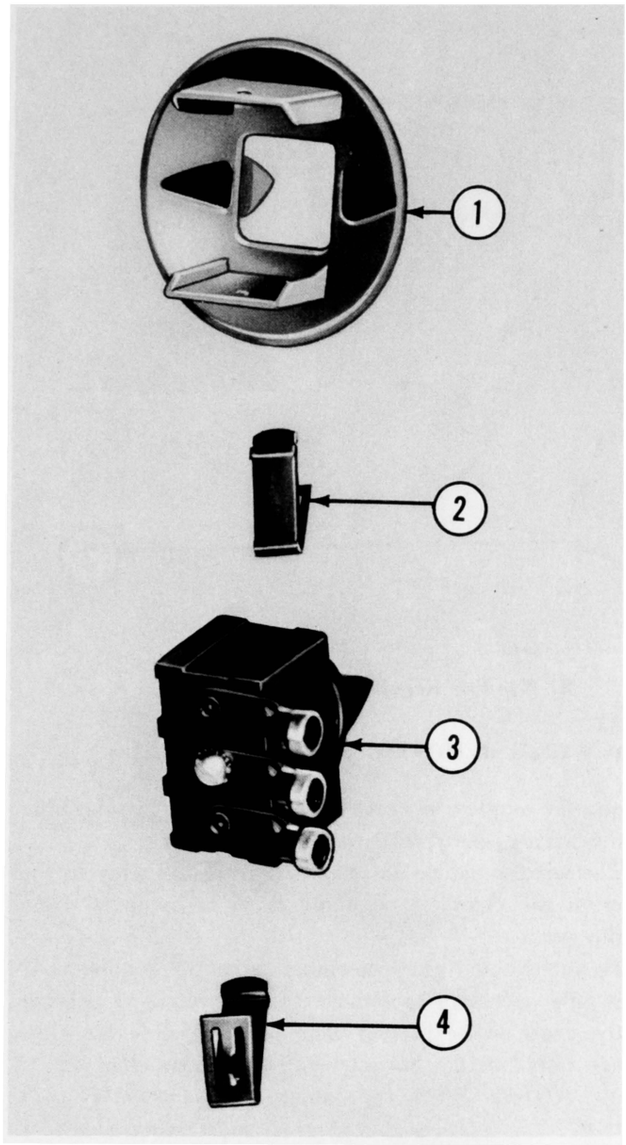
Remove window regulator arm to bottom channel retainers. Pull each arm from the bottom channel and remove fibre and spring washer from the arm stud. Then set the arm back into the bottom channel. (This will prevent misplacement of these parts.)

Insert wood block to support glass in raised position. Remove window regulator arm screws (Fig. 11).

CAUTION: This arm is under spring tension and must be held firm while removing screws. Then carefully release the arm to prevent injury.

Support the window regulator and motor assembly to prevent falling and possible damage as the regulator to door panel screws are removed.

The door window regulator, with arms in raised position, can be removed or installed through the front opening of the door inner panel.



1. Individual Switch Housing
2. Combination Switch Retaining Spring (Outside View)
3. Switch Unit
4. Combination Switch Retaining Spring (Inside View)

FIGURE 10
INDIVIDUAL DOOR SWITCH ASSEMBLY

WINDOW REGULATOR MOTOR

The motor shaft is directly connected to the window regulator transmission worm gear shaft by a rubber coupling. The motor mounting studs are fastened to the window regulator frame bracket. They are insulated and cushioned by two rubber grommets in the mounting holes of the bracket. These are protected by two concave steel washers at each grommet (Fig. 1).

WINDOW REGULATOR TRANSMISSION ASSEMBLY

The transmission assembly is mounted to the window regulator assembly by three screws (Fig. 12).

The screws are inserted through the window regulator from the gear side and screwed into the threaded sections of the transmission cover.

They are only accessible for removal and installation after the assembly is removed from the door and the window regulator arms are moved to the full lowered position.

The window regulator arms can be lowered or raised manually by turning the transmission worm shaft at the rubber coupling.

Transmission Disassembly

For disassembly of the transmission assembly, the worm gear snap ring must be removed. Exercise care in prying the snap ring from the groove in the pinion. Otherwise damage will result.

Lubrication

The transmission cover gasket loosens whenever the transmission screws are removed. This causes leakage of lubricant. Inspection should be made to check the lubricant in the transmission assembly. A new gasket should be used in reassembly.

When the transmission is disassembled, all lubricant should be removed and replaced.

Lubricant should be forced to the end bearings in the housing by turning the worm.

A light film of lubricant should be applied to the pinion when it is installed in the housing, also to the worm gear and the pinion bearing surface of the housing cover.

The lubricant used in the transmission must be an SAE 140 mineral gear lubricant.

WINDOW ASSEMBLY ALIGNMENT

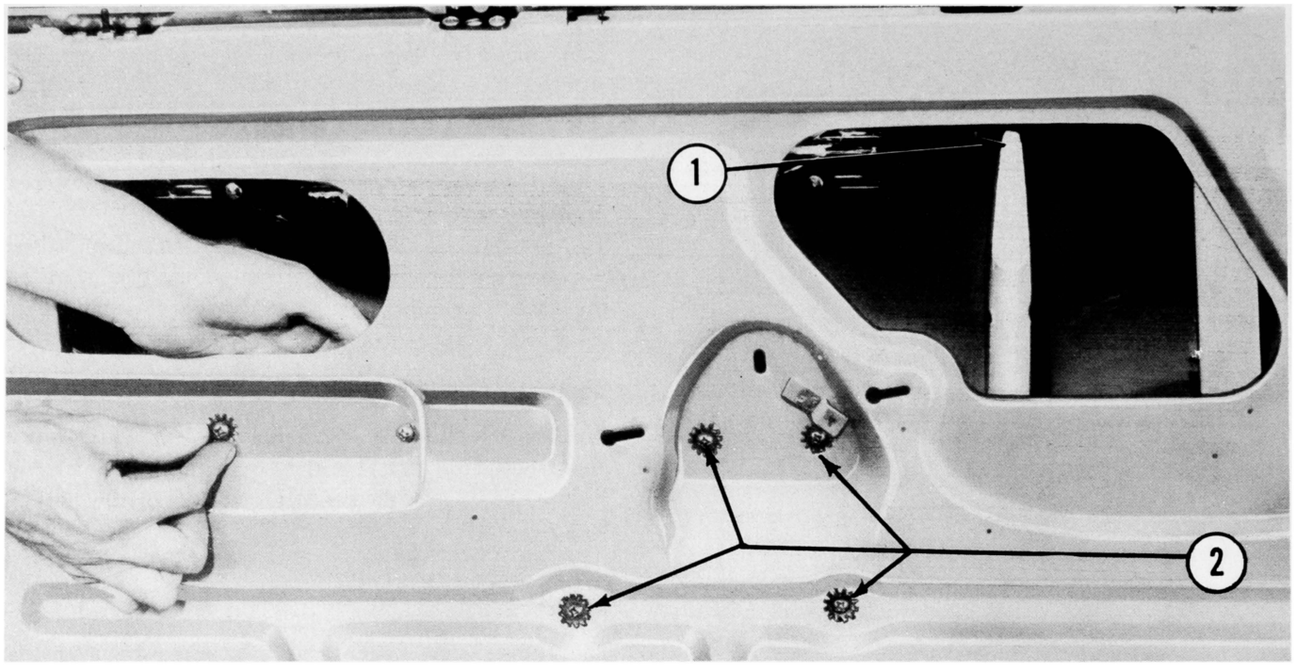
It is important that the alignment of the window glass assembly be such that it slides freely in its channels. The glass assembly should be raised and lowered by hand to check the operation.

Two Door and Four Door Models

In the four door and two door models, the door division bar channel and aluminum frame may have to be aligned to allow the window to operate freely in its channels.

Country Club Models

The glass guide and slide channel adjustment, as shown in Figure 13, control the alignment of these units so the glass will raise and lower without binding. The channel section of the guide channels should be lubricated with lubriplate.



1. Glass Raised and Supported by Wood Block 2. Window Regulator to Door Screws

FIGURE 11
HOLDING WINDOW REGULATOR ARM WHILE REMOVING SCREWS

When alignment of channels and lubrication of guide channels has provided free movement of the glass, the regulator arms may be connected to the bottom channel. Then connect the switch; operate for final check of adjustment of the channels and the window regulator.

REMOVAL OF THE REAR QUARTER WINDOW REGULATOR AND GLASS ASSEMBLY

Country Club

Disconnect battery.

Remove the rear seat cushion and back assembly.

Remove switch from trim panel and disconnect wires.

Remove armrest trim panel and finish moulding.

After the trim parts are removed, particular attention should be given to the location of the sealing tape, sealing rubber, and putty so resealing is done in the same location on reassembly.

Before removing the window regulator panel and glass assembly, mark the window regulator panel and the adjoining pillars at two or three places on each side and at the bottom (Fig. 14). The regulator panel can be adjusted more readily by the use of these markings at installation.

Remove the guide channel fastening to body bracket screw and the window regulator bracket to body panel screws. Then remove all screws holding window regulator panel to body.

The complete assembly may be lifted from the side quarter window opening for accessibility in checking the wiring, relay, and motor.

The wires must be disconnected from the relay in the event the complete assembly is to be removed from the car.

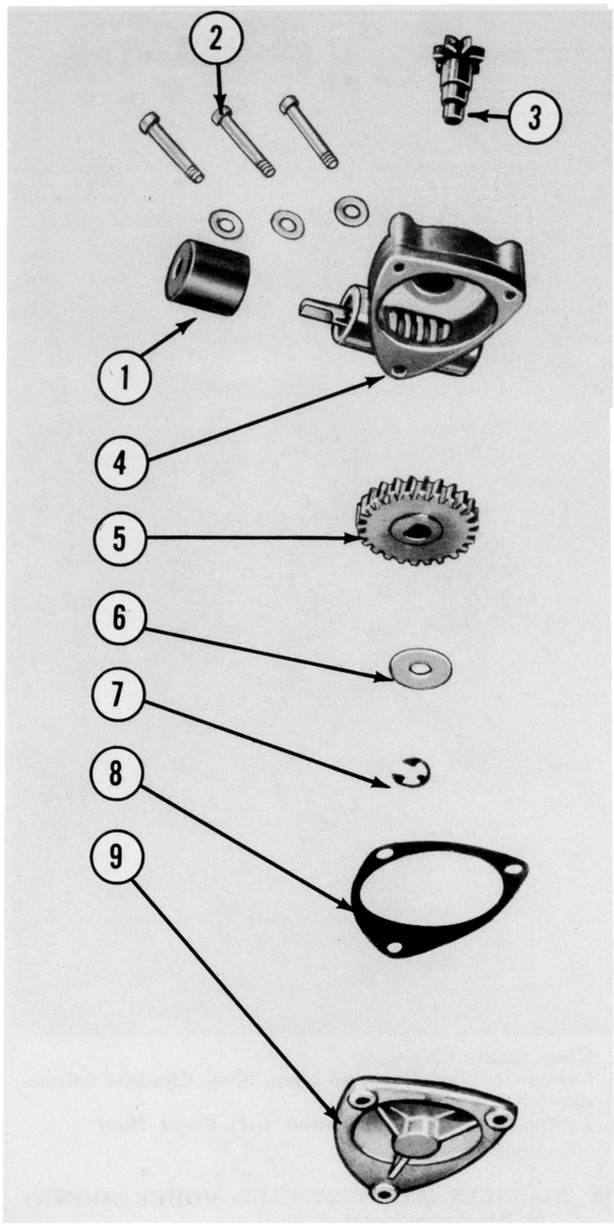
To remove the glass assembly from the regulator, it is only necessary to remove the two retainers holding the arms to the bottom channel; then slide the glass assembly out the lower end of the guide channel.

NOTE: When reassembling this assembly, the regulator arms must move free in the bottom channel and the regulator panel. The bottom channel studs must move free in the channel section of the guide channel. Check for clearance and lubricate with lubriplate.

The rear quarter window regulator and panel assembly includes the rear quarter regulator panel, guide channel, regulator, and motor assembly.

The channel section of the guide channel serves as a race for the studs on the glass bottom channel. Free smooth operation is essential, therefore, the studs must be installed properly and lubricated with no kinks or tight places in the channel section.

The window regulator arm spring washers are installed on the arm studs first, then the fibre washers. The regulator arm studs are then inserted through the race in the bottom channel. These are locked in place by the retainers.



1. Coupling
2. Screws and Washers, Transmission to Regulator
3. Pinion and Regulator Gear
4. Housing and Worm Assembly
5. Worm Gear
6. Worm Gear Spacer Washer
7. Snap Ring
8. Gasket
9. Housing Cover

FIGURE 12
INDIVIDUAL PARTS OF WINDOW REGULATOR TRANSMISSION

DIAGNOSIS

To have satisfactory operation of the windows, whether they are manually or automatically-operated, all friction must be eliminated.

The glass assembly and other parts must be in proper alignment and lubricated. This will insure free movement of the window regulator and the sliding action of the glass when it is raised or lowered.

Automatically-operated windows that bind and are hard to operate are not easily detected except the electric motor will operate slowly due to its overload. This will result in damage to the parts that are in misalignment and the possibility of burning out the motor.

The following are symptoms and causes of inoperative windows together with suggestions for their correction:

All Windows Fail to Operate in Either Direction or Operate Slowly

Battery dead or too low to operate motor.

Circuit breaker inoperative.

Battery ground wire loose or terminal in control circuit loose or corroded.

One Window Fails to Operate in Either Direction

Check wiring to determine whether unit is getting current. To do this, first check for current at battery terminal or left circuit breaker.

If inoperative unit is on left side of body, check to see if current is passing through left circuit breaker.

If inoperative unit is on right side of body, check right circuit breaker for current at battery terminal and if it is passing through the circuit breaker.

If Circuit Breakers are O.K. —

Check wiring from circuit breaker to motor relay. Consult wiring diagram for proper circuit wiring at relay. Then consult relay circuit diagram that proper check can be made to see that points are not stuck and current is getting to motor.

If motor is getting current but still does not function, remove the motor from the window regulator assembly and check it to the motor specifications. If motor checks satisfactorily, then the window regulator pivots must be checked to be sure they are not frozen or rusted.

If motor and pivots are in order, the transmission assembly should be removed from the regulator. Turn the transmission worm shaft. If it is hard to operate, inspect for binding of the pinion gear and thrust washer. After these are removed and the worm shaft still turns hard, remove the pinion. If the pinion and bearing is in order and the worm shaft still turns hard, replace the housing and the worm assembly.

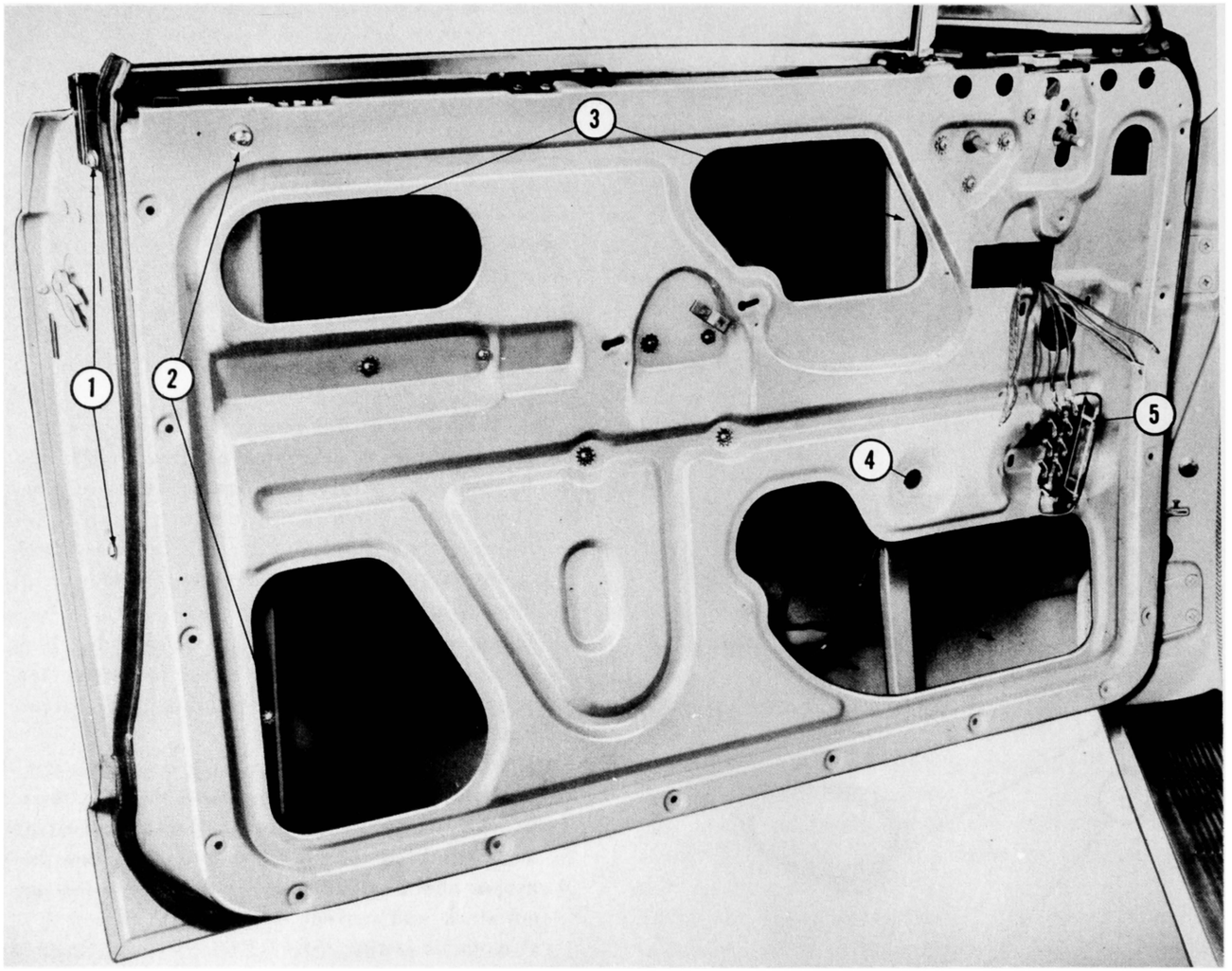
If the Glass Sticks When Fully Raised or at the Lowered Position at the End of the Stroke, Check the Following Possible Conditions:

Remove the assembly and check for excessive play in pivots of regulator or lack of lubricant at pivots.

Check for correct type or insufficient lubricant in transmission.

If the transmission worm shaft turns hard, replace housing and worm assembly.

If Unit is Slow Going Up, the Following Must be



1. Glass Slide Channel Door Lock Post Adjustment Screws
2. Glass Guide Channel Door Lock Post Side Adjustment Screws
3. Glass Guide Channels
4. Center Division Bar and Glass Slide Channel Adjustment Screw
5. Switch Wired for Operation Left Front Door

FIGURE 13
ADJUSTMENT SCREWS FOR THE GLASS GUIDE AND SLIDE CHANNELS (COUNTRY CLUB MODEL SHOWN)

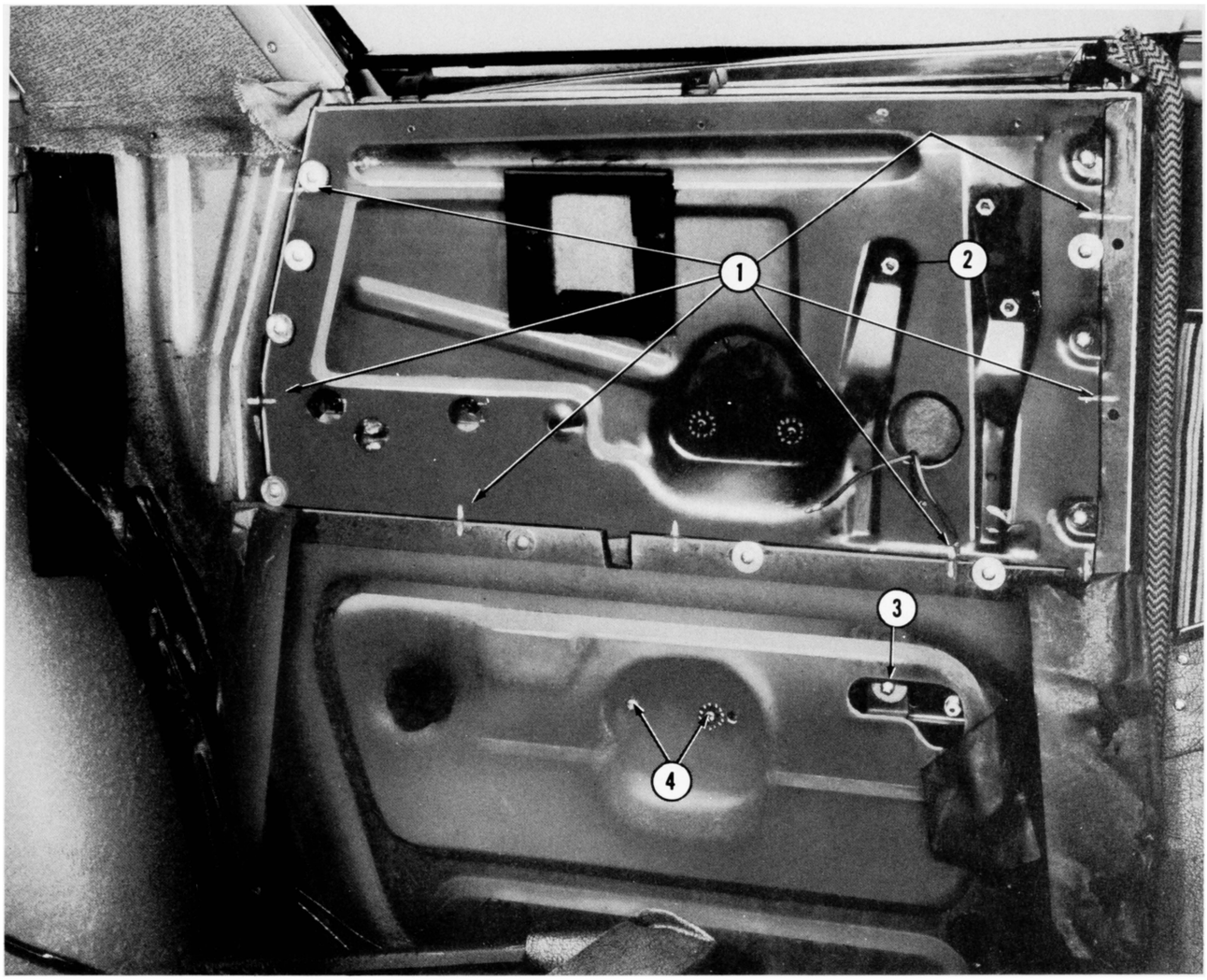
Checked:

Proper clearance in glass slide channels.
Proper alignment of glass slide channels.
Proper alignment and lubrication in guide channels.
Counter-balance spring on regulator may be broken or fatigued.
Weak motor.

MOTOR SPECIFICATIONS

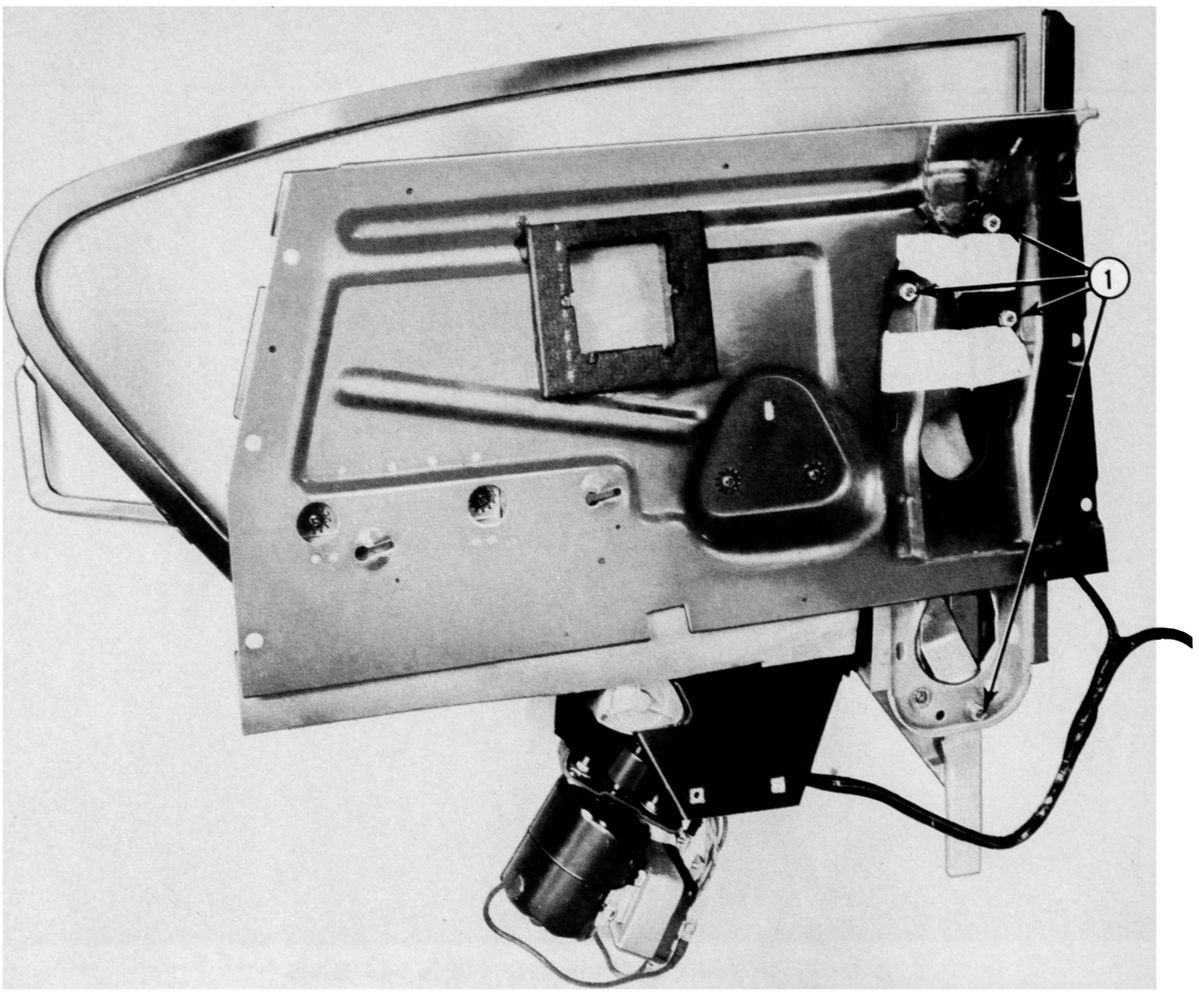
Type — Shunt Wound
5.5 Volt — Cold Torque Test
Amps. — 42 Maximum
R.P.M. — 3200 Minimum
Torque — 35 Oz. In. Minimum
Volt — Stalled Test — Cold
Amps. — 115 Minimum
Torque — 90.02 In. Minimum

ROTATION REVERSIBLE Color Code
Clockwise Shaft End Rotation
Red and Green to One Side of Line
Counter-Clockwise Shaft End Rotation
Brown and Green to One Side of Line
Ground Opposite Side of Line
Shaft End Play — .005" to .015"



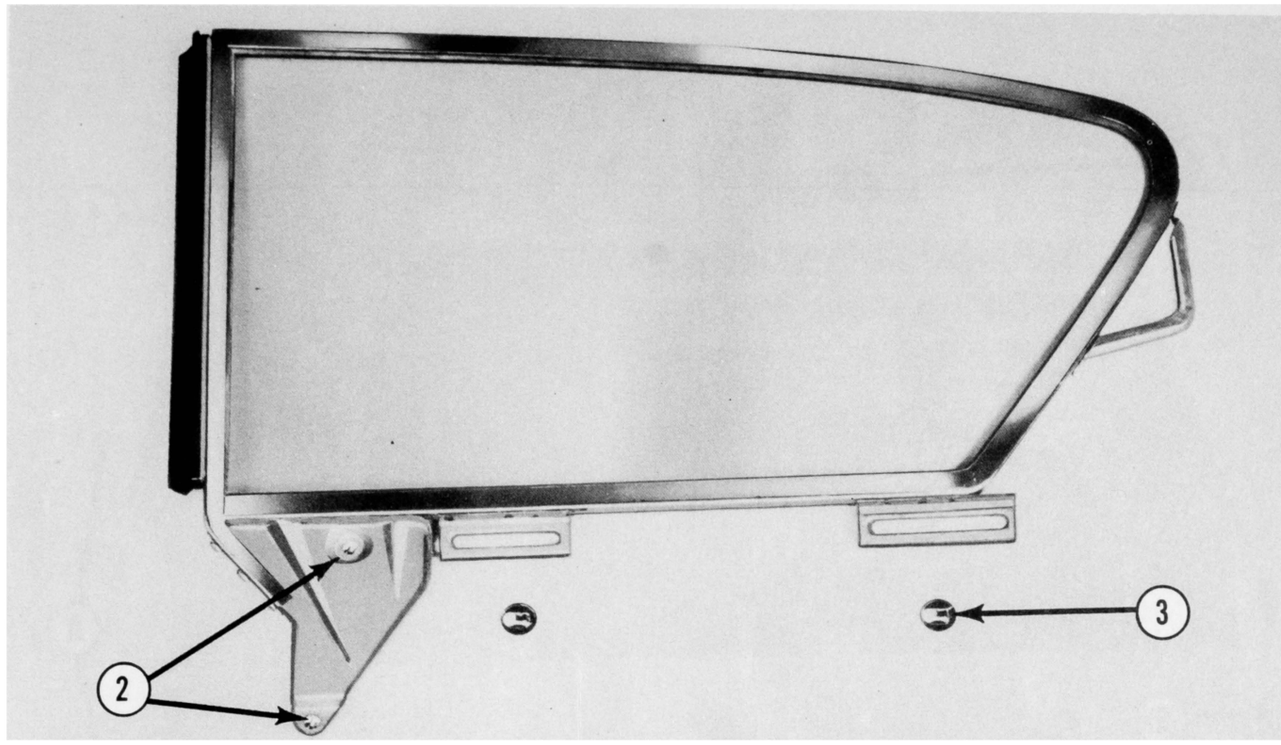
1. Marks on Panel and Adjoining Pillars and Lower Panel
2. Guide Channel Adjusting Screws and Lock Nuts
3. Guide Channel Fastening Screw to Body Bracket
4. Window Regulator Bracket to Body Screws

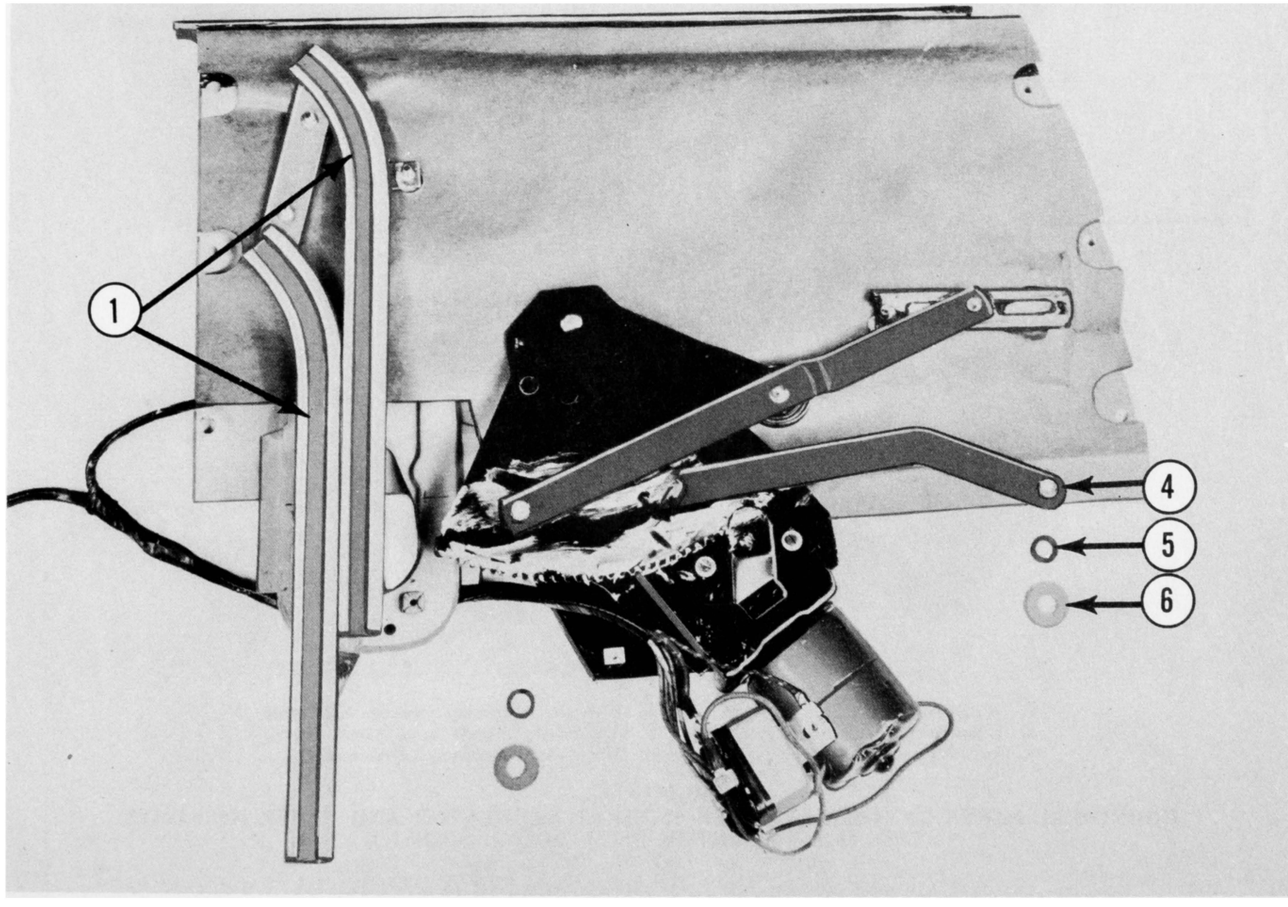
FIGURE 14
WINDOW REGULATOR PANEL



1. Guide Channel Adjusting Screws and Lock Nuts

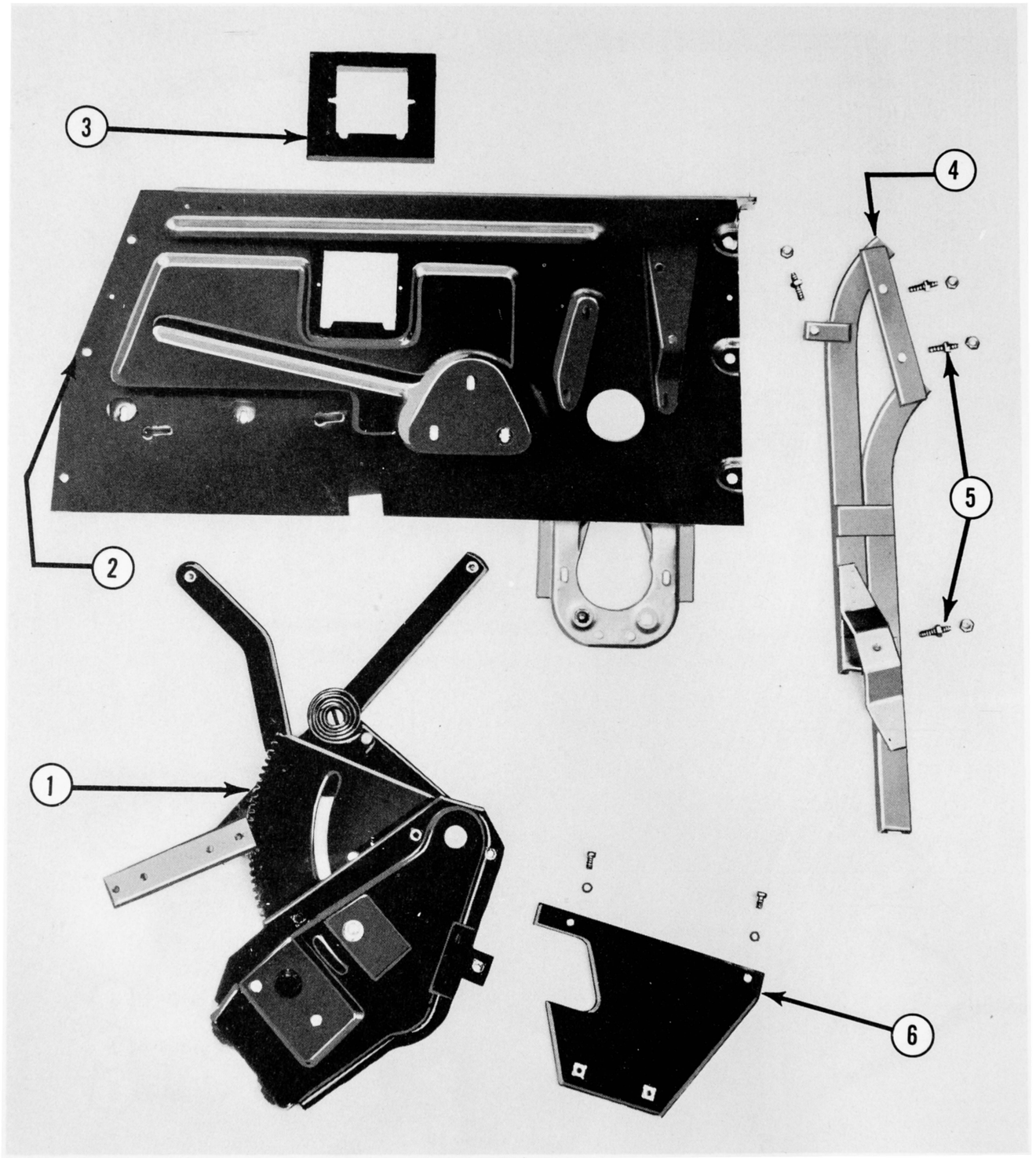
FIGURE 15
REAR QUARTER WINDOW REGULATOR AND GLASS ASSEMBLY





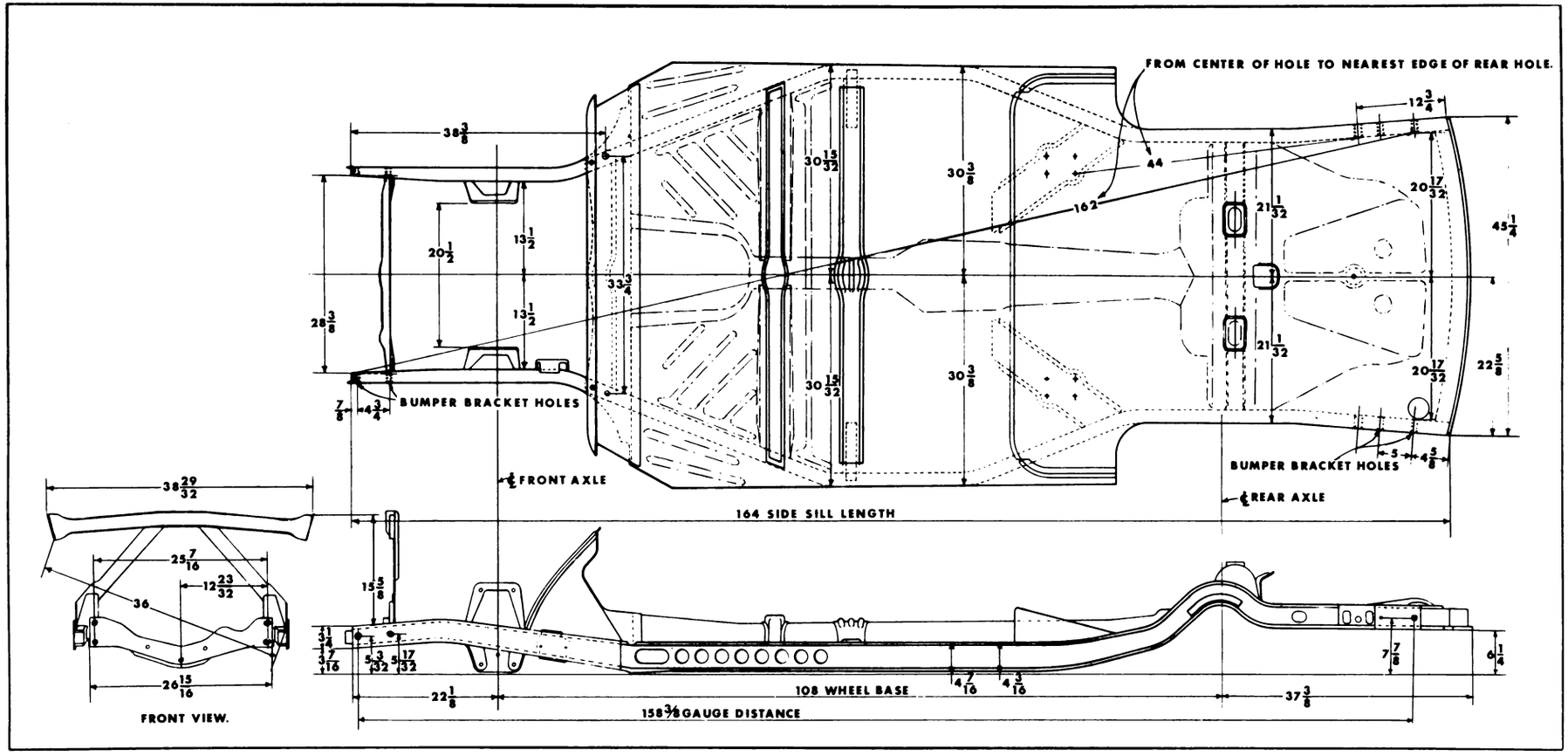
1. Guide Channel
2. Studs on Bottom Channel
3. Retainers
4. Regulator Arm Stud
5. Spring Washer
6. Fibre Washer

FIGURE 16
REAR QUARTER GLASS ASSEMBLY REMOVED FROM REGULATOR AND PANEL ASSEMBLY



1. Window Regulator
2. Window Regulator Panel
3. Ash Receiver Spacer
4. Bottom Channel Guide Channel
5. Adjusting Studs and Lock Nuts
6. Window Regulator Bracket

FIGURE 17
INDIVIDUAL PARTS OF REAR QUARTER WINDOW REGULATOR AND PANEL ASSEMBLY
(LEFT SIDE COUNTRY CLUB MODEL SHOWN)



BODY FRAME DIMENSION CHART
1954 "RAMBLER" 108" WHEELBASE MODELS

LUBRICATION SECTION

1954 SERIES NASH LUBRICATION

Location	Lubricant	Mileage Interval	"Ambassador" Series	"Statesman" Series	"Rambler" Series
Front Suspension	Chassis Lubricant	1,000	9 Oilers 11 Oilers with Power Steering	9 Oilers	11 Oilers
Power Steering Unit	Hydra-Matic Fluid Maintain Level 1" Below Top of Oil Reservoir	1,000 Check	X		
Battery		1,000 Check Level	X	X	X
Gear Shift Lever	Chassis Lubricant	5,000	1 Oiler	1 Oiler	1 Oiler
Steering Gear	SAE 90 Steering Gear Lubricant	3,000	Plug	Plug	Plug
Water Pump	Water Pump Lubricant	5,000	1 Oiler	1 Oiler	1 Oiler
Air Cleaner					
Dry Type	Engine Oil	2,000	Clean & Reoil	Clean & Reoil	Clean & Reoil
Oil Bath Type	Engine Oil	5,000	Follow Label	Follow Label	Follow Label
Generator	Light Engine Oil	5,000	2 Oil Cups	2 Oil Cups	2 Oil Cups
Starter	Light Engine Oil	5,000	2 Oil Cups	1 Oil Cup	1 Oil Cup
Engine Oil Pan	Engine Oil	2,000 Drain & Refill	6 Qts.	4 Qts.	4 Qts.
	Above 32° F.	SAE 20 or 20W			
	Below 32° F.	SAE 10W			
	Sub Zero	SAE 5W			
Crankcase Breather	Engine Oil	5,000 Clean & Reoil	X	X	X
Distributor	Petroleum Jelly Wipe on breaker cam	1,000	X	X	X
	Light Engine Oil One drop on breaker pivot and breaker plate felt wick	5,000	X	X	X
Front Wheel Bearings	Wheel Bearing Lubricant	10,000 Repack	X	X	X
Rear Axle Shaft Bearings	Wheel Bearing Lubricant	15,000 Repack	X	X	X
Rear Axle Drive Gears	SAE 90 Hypoid Oil At Regular Drain and Refill Period, Use Only SAE 90 Oil Suitable for Hypoid Gears	1,000 Check 10,000 Drain Flush & Refill or Yearly	4 Pts.	3 Pts.	3 Pts.
Transmission and Overdrive	SAE 90 Mineral Gear Lubricant in Warm Weather. SAE 80 in Cold	1,000 Check 10,000 Drain & Refill	Regular 2¼ Pts. Overdrive 3½ Pts.	Regular 2¼ Pts. Overdrive 3½ Pts.	Regular 1½ Pts. Overdrive 2¾ Pts.

LUBRICATION SECTION

Location	Lubricant	Mileage Interval	"Ambassador" Series	"Statesman" Series	"Rambler" Series
Hydra-Matic Transmission	Hydra-Matic Fluid	1,000 Check 25,000 Drain & Refill	11 Pts.	8½ Pts.	8½ Pts.
Master Cylinder	Lockheed 21-B Fluid	1,000 Check	X	X	X
Universal Joints	Chassis Lubricant	15,000 Repack	X	X	(Mechanics Univ. Joints 108" W.B.)
	SAE 140 Mineral Oil	5,000			3 Oilers (Spicer Univ. Joints 108" W.B.)
Propeller Shaft Slip Joint	Chassis Lubricant	1,000			1 Oiler (108" W.B.)
Torque Tube Trunnion	Chassis Lubricant	5,000		1 Oiler	
Clutch Beam	Chassis Lubricant	1,000	X	X	X
Pedal Shaft	Chassis Lubricant	1,000	X	X	X
Throttle Shaft and Throttle Shaft Felt Wick	Engine Oil	1,000	X	X	X
Hand Brake Bell Crank	Engine Oil	1,000	X	X	X

MISCELLANEOUS

Cooling System

Maintain water level and expansion space. Add inhibitor. Drain and flush before adding anti-freeze. "Rambler" Series water pump drain only.

"Ambassador" Series	"Statesman" Series	"Rambler" Series
18 Qts.	15 Qts.	12 Qts.

(Quantities include 1 Qt. for cars equipped with Weather Eye.) Pressure cap 7 lbs. release pressure. Maintain expansion space.

Tires: 24 lbs. Check pressure when tires are cold.

TECHNICAL SERVICE LETTER REFERENCE

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